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GPH 2014

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Welcome to GPH 2014

Dear Colleague,

Welcome to the second international conference on Global Public Health (GPH) 2014. This year’s theme is “Development agenda at cross-roads” with education, economy and equality as three pillars for global health at large. The International Centre for Research and Development (ICRD), Sri Lanka and Umeå Centre for Global Health Research (UCGHR), Umeå, Sweden are proud to host this event in Negombo, Sri Lanka.

In this transitory and ever changing world, harnessing skills and energies within different disciplines and applying them for solutions is the new challenge for all professions. Conferences are participatory meetings designed for discussion, fact-finding, problem solving and consultation. The GPH conferences are convened with this understanding to be operated in developing country settings where there is limited international scientific exchange on global health issues. The young or even senior professionals in these settings are eager to participate and communicate on equal opportunity basis. They know their context best and giving them an opportunity to present in a familiar setting is the need and our vision.

During these two days, you will meet academics, students, advocates, from many countries, but more from the Asian region. Our priority lies in creating an environment for our delegates to meet, share and network in a co-beneficial environment. More so, we want you to interact openly and find learning from each other as a way forward. Above all, we want you to leave with positivity and sense of optimism that you are a part of a network that is working for ‘health of all’ and envisions ‘Health is not a charity, it is a right’.

We are truly grateful for the partnership with the College of Community Physicians of Sri Lanka (CCPSL), to organize this event again in Sri Lanka. We really appreciate this support.

Enjoy your time in Negombo and we hope you will take out time to see some other parts of this beautiful country. We wish you a safe journey home and hope you will keep in touch with GPH network and attend our future conferences.

Raman Preet
Co-Convener, GPH Conferences
Research Coordinator
UCGHR, Umeå University, Sweden

Prabhash Patabendi
Co-Convener, GPH Conferences
Director, ICRD
Sri Lanka
Welcome: Planning Committee

Dear Colleague,

We welcome you to Negombo, Sri Lanka, for GPH 2014, our second international conference on global public health organized by International Center for Research & Development, Sri Lanka and Umeå, University, Sweden

In this extra-ordinary time in global health we are gathered together simply for one reason and that is our passion to contribute and make a difference, no matter how big or small. In the coming two days we will explore our conference theme, ‘Development agenda at cross-roads’ the sessions for which are assimilation of the following streams.

- Reorienting health education for global health education and training programs
- Role of universities in multi-disciplinary approaches to global health
- Universal free access to health information
- Integrating global oral health into global health education
- Environmental and socio-economic determinants of health
- Equity and justice in global health
- Gender perspective in global health policies, programs and actions
- From infectious diseases to non-communicable diseases and injuries
- Advancing health agenda in political priorities like climate change, bio-technology
- Philanthropy for global health: opportunities and challenges
- Enabling national health systems for effective global health programs

Nearly 50 presenters from 20 countries will share their research work in 2014 conference. There is a need for inter-professional development not within the health sector but beyond to eliminate the disparities that have direct improvement on health. Because, health is a global matter and the reason is simple: health is a foundation of prosperity, stability and poverty reduction that are important for development of any nation.

We are very grateful to all our delegates for their participation and to our local partner CCPSL, for their valuable contribution. At GPH we wish to harness the sense of belonging, commitment and sharing for the common cause during the days of events and beyond. So, keep in touch with your fellow colleagues and we hope to see you in future too.

Thank you for joining with us!

Raman Preet BDS, MPH  
Umeå University  
Sweden

Dr. Hana Taha PhD  
Karolinska Institute  
Sweden

Fredinah Namatova  
Umeå University  
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Dr. Dr. Ying Zhang  
School of Public health  
University of Sydney

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PROFILES OF KEYNOTE SPEAKERS

Dr Ying Zhang (PhD in Public Health, Master of Sustainability).

She has been working as an epidemiologist and teaching public health in Australia and China. She is a lecturer in International Public Health of the School of Public Health and China Studies Centre at the University of Sydney and affiliate senior research fellow at the Discipline of Public Health, University of Adelaide. Her research interests include climate change and population health, management of multi-morbidities among the elderly, and sustainability & health. She is a registered primary supervisor of higher degree research candidates at the University of Sydney. Ying teaches postgraduate students for the Master of International Public Health (MIPH) program at the School of Public health. Dr. Zhang is the honorary Academic Chair in Australia for International Center for Research & Development.

Dr. Paba Palihawadana (PhD in public health)
President of the College of Community Physicians of Sri Lanka 2013/2014

Former Director of Central Epidemiology Unit and in-charge of the Expanded Programme of Immunization in the Ministry of Health Sri Lanka. Visiting scientist in CDC, Atlanta, USA from 2001-2002 and worked in the WHO/SEARO region in 2003, 2004, 2008 and 2010 as a short term consultant to review AFP Surveillance activities, preparation of guidelines on measles and rubella surveillance for the Expanded Programme of Immunization in Bangladesh. She is a visiting lecturer, examiner and a member board of study in community medicine and medical administration in the University of Colombo. She is a contributor to Guidelines on National Immunization Programme Sri Lanka, member in the National Advisory Committee on immunization and communicable diseases, Secretary Technical Committee on influenza pandemic preparedness and member drug evaluation subcommittee.
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The Effects of Coronary Artery Bypass Grafting (cabg) on Individual’s Quality of Life

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Abstract

Background: Coronary artery bypass grafting (CABG) improves quality of life (QoL). However little is known about how CABG affects QoL in the Sri Lankan setting.

Objective: The purpose of this study was to examine the differences between pre-operative and post-operative domains of quality of life (eg. health and functioning, socio-economic, psychological/spiritual and family) before and 1 year after the CABG.

Methods: A cross sectional, comparative study was conducted at the Cardiology unit and the cardiothoracic unit of the National Hospital of Sri Lanka. Fifty pairs of pre-operative and post-operative subjects matched on age, gender and body mass index participated. The health and functioning, socio-economic, psychological/spiritual and family domains of quality of life were assessed using Ferrance and Powers QoL Index - cardiac version 04.

Results: QoL of post-operative patients improved on health and functioning, psychological/spiritual and family domains following CABG regardless of age and gender (p<0.05). Compared with younger age group, elder age group reported more improvements on health and functioning domain (p<0.05).

Conclusion: Significant improvements of QoL was associated with CABG especially in the older age group. Future research with prospective, longitudinal large studies are required to investigate and confirm the results of this study.

Keywords: Coronary artery bypass grafting (CABG), Quality of life (QoL).

Introduction

By the end of the 20th century, cardiovascular diseases (CVD) have become number one cause of death globally [1]. An estimated 17.3 million people died from CVD in 2008, representing 30% of all global deaths. [2] and 7.3 million deaths were due to coronary heart disease (CHD)[3]. Over 80% of CVD deaths take place in low and middle-income countries and occur in almost equal numbers in men and women [2]. In 2003 CVD was ranked within the first few leading cause of hospital deaths in Sri Lanka [4], with 524 deaths per 100000 population, higher than that observed in many high income countries [5]. CHD is the leading cause of death in Sri Lanka and has accounted for 34% of deaths in an autopsy study [6]. In comparison, CHD accounts for only 17% of deaths in the United States [7]. Data obtained from The Society of Thoracic Surgeons revealed that the number of patients undergoing coronary artery bypass grafting (CABG) is gradually increasing [8]. In 2008, 408000 in-patient bypass procedures were performed in the United States. Annually about 60000 CABG are performed in India [9]. In Sri Lanka, a total number of 1480 cardiothoracic surgeries have been performed in the National Hospital Sri Lanka in 2007, most of them being CABG [10].

Traditionally, outcomes such as mortality or morbidity have been used to assess therapeutic interventions [11]. Along with the substantial decline in operative mortality with CABG surgery over the past 30 years, quality of life (QoL) has also become an important outcome to more clearly define the benefits and risks associated with cardiac operations and assist patients to make more informed treatment decisions [12]. The ACC/AHA guidelines for CABG [13] suggest that an improvement in QoL is the primary indication for the operation. Thus, in addition to survival, QoL has become an important outcome of bypass surgery. Hence, there has been growing interest in using QoL outcomes as a tool to evaluate the benefits risks ratio associated with CABG to help clinicians to make decisions towards the surgery.

The purpose of this study is to document the pre-operative and post-operative QoL of the patients undergoing CABG to determine whether improvement or decrement is seen and whether gender and age associated changes exist in the pre-operative and post-operative QoL. Currently CABG has become one of the major open heart surgeries, performed annually both in governmental and non-governmental sectors of Sri Lanka. Since, no other research details were identified in the Sri Lankan setting describing age and gender associated changes in QoL in...
patients before and after CABG, it is hoped that the results of this study will enhance a stage of clinical decision making regarding CABG in Sri Lanka.

Methodology

This cross-sectional comparative study was conducted over 3 months (January-March 2013) in the thoracic unit and cardiology unit of National Hospital Sri Lanka (NHSL) on two groups; pre-operative CABG and post-operative CABG; with 50 subjects in each group. The pre-operative group, was selected from patients awaiting their first CABG in the thoracic unit, 1-7 days prior to surgery. The post-operative group was selected from patients who had undergone CABG 10-15 months before, managed post-operatively in the rehabilitation program in the cardiology department and attending cardiology clinics at NHSL. They had followed the same pre-operative process. Convenient sampling was used and each post-operative patient was matched with the pre-operative counterpart for age, gender and body mass index (BMI). Patients who underwent any cardiac, thoracic, aortic or vascular procedures other than CABG were not included in the study. As NHSL is the major center for the cardiac surgeries in Sri Lanka it enhances the generalizability of the results of this study.

The study tool was the interviewer administered Ferrance and Powers Quality of Life Index-Cardiac Version-4, which has been used successfully in a number of treatment evaluations, including cardiac transplantations, heart and lung transplantations, cardiovascular strokes and CABG[14]. It measures satisfaction with different aspects of life as well as importance of each of these aspects to the individual. Both satisfaction and the importance sections contain 35 items which the respondents had to rate on a 6-point scale ranging from 1 (very dissatisfied/ unimportant) to 6 (very satisfied/important) and from the following subscales; health and functioning, socioeconomic, psychological/spiritual, and family. The range of scores for each subscale is 0-30. Scores are calculated by weighting each satisfaction response with its paired importance response, summing the response, and dividing by the number of items answered. The questionnaire written originally in English, was translated into Sinhalese, back translated and pre-tested.

QoL scores were calculated according to the Ferrance and Powers guidelines. Patient’s characteristics and QoL were compared between two groups, using Independent sample T test. An alpha level of p<0.05 was considered significant for all analyses. Statistical analyses were performed with SPSS version 17.0.

Results

Sample characteristics

The pre-operative and post-operative groups each consisted of 50 participants (male: female 30:20 in each). Means of parameters in the pre and post-operative groups were compared using independent sample T test. The pre and post-operative groups can be considered homogenous as there were no significant differences in means (p>0.05) of age, gender, weight, height and BMI, between the two groups. (Table 01)

Pre and post-operative QoL

Means of health and functioning, socio-economic, psychological/spiritual and family domains QoL and overall QoL were compared in between pre and post-operative groups using independent sample T test. There was a significant improvement in all domains of QoL and overall QoL after CABG except in the socio-economic domain (p<0.05). (Table 02)
Table 01: Comparison of sample characteristics between pre and post-operative groups

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>T value</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Pre-op</td>
<td>50</td>
<td>57.240</td>
<td>6.216</td>
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<tr>
<td></td>
<td>Post-op</td>
<td>50</td>
<td>57.400</td>
<td>6.216</td>
<td>1.000</td>
</tr>
<tr>
<td>Height (m)</td>
<td>Pre-op</td>
<td>50</td>
<td>1.588</td>
<td>0.088</td>
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<tr>
<td></td>
<td>Post-op</td>
<td>50</td>
<td>1.609</td>
<td>0.085</td>
<td>0.223</td>
</tr>
<tr>
<td>Weight (kg)</td>
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<td>50</td>
<td>66.758</td>
<td>9.680</td>
<td>-0.637</td>
</tr>
<tr>
<td></td>
<td>Post-op</td>
<td>50</td>
<td>67.918</td>
<td>8.488</td>
<td>0.526</td>
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<tr>
<td>BMI (kg/m²)</td>
<td>Pre-op</td>
<td>50</td>
<td>26.441</td>
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<tr>
<td></td>
<td>Post-op</td>
<td>50</td>
<td>26.503</td>
<td>2.619</td>
<td>0.908</td>
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Table 02: Comparison of QoL between pre and post-operative groups

<table>
<thead>
<tr>
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<th>Mean</th>
<th>Std. Deviation</th>
<th>T value</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health and functioning</td>
<td>Pre-op</td>
<td>50</td>
<td>16.641</td>
<td>1.200</td>
<td>-3.627</td>
</tr>
<tr>
<td></td>
<td>Post-op</td>
<td>50</td>
<td>21.553</td>
<td>1.152</td>
<td>0.000</td>
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<tr>
<td>Socio-economic</td>
<td>Pre-op</td>
<td>50</td>
<td>22.017</td>
<td>1.972</td>
<td>-4.142</td>
</tr>
<tr>
<td></td>
<td>Post-op</td>
<td>50</td>
<td>20.033</td>
<td>1.933</td>
<td>0.161</td>
</tr>
<tr>
<td>Psychological/spiritual</td>
<td>Pre-op</td>
<td>50</td>
<td>20.033</td>
<td>1.933</td>
<td>-4.101</td>
</tr>
<tr>
<td></td>
<td>Post-op</td>
<td>50</td>
<td>21.386</td>
<td>1.041</td>
<td>0.000</td>
</tr>
<tr>
<td>Family</td>
<td>Pre-op</td>
<td>50</td>
<td>23.738</td>
<td>1.767</td>
<td>-4.783</td>
</tr>
<tr>
<td></td>
<td>Post-op</td>
<td>50</td>
<td>25.181</td>
<td>1.951</td>
<td>0.000</td>
</tr>
<tr>
<td>Overall QoL</td>
<td>Pre-op</td>
<td>50</td>
<td>19.505</td>
<td>0.898</td>
<td>-2.918</td>
</tr>
<tr>
<td></td>
<td>Post-op</td>
<td>50</td>
<td>21.241</td>
<td>0.711</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Table 03: Comparison of QoL between men and women and elder and younger in pre and post-operative groups

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>Mean</th>
<th>T value</th>
<th>p value</th>
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</thead>
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<tr>
<td>Health and functioning</td>
<td>Pre-op</td>
<td>M 20</td>
<td>16.589</td>
<td>-0.583</td>
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<tr>
<td></td>
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<td>F 20</td>
<td>16.753</td>
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</tr>
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<td></td>
<td>Post-op</td>
<td>M 20</td>
<td>24.489</td>
<td>-0.943</td>
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<tr>
<td></td>
<td></td>
<td>F 20</td>
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<td>-0.345</td>
</tr>
<tr>
<td>Socio-economic</td>
<td>Pre-op</td>
<td>M 30</td>
<td>21.832</td>
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<tr>
<td></td>
<td></td>
<td>F 30</td>
<td>21.339</td>
<td>-1.135</td>
</tr>
<tr>
<td></td>
<td>Post-op</td>
<td>M 30</td>
<td>22.477</td>
<td>0.181</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F 30</td>
<td>22.057</td>
<td>0.218</td>
</tr>
<tr>
<td>Psychological/spiritual</td>
<td>Pre-op</td>
<td>M 20</td>
<td>20.099</td>
<td>0.161</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F 20</td>
<td>19.979</td>
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<tr>
<td></td>
<td>Post-op</td>
<td>M 20</td>
<td>24.593</td>
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</tr>
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<td></td>
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<td>Family</td>
<td>Pre-op</td>
<td>M 30</td>
<td>23.708</td>
<td>1.248</td>
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<td></td>
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<td>F 30</td>
<td>25.099</td>
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</tr>
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<td></td>
<td>Post-op</td>
<td>M 30</td>
<td>19.440</td>
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<td></td>
<td></td>
<td>F 30</td>
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<tr>
<td>Overall QoL</td>
<td>Pre-op</td>
<td>M 20</td>
<td>24.311</td>
<td>-0.361</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F 20</td>
<td>24.286</td>
<td>-0.361</td>
</tr>
</tbody>
</table>

M=Male; F=Female; E=Elder; Y=Younger

Discussion

Pre and post-operative QoL

The ACC/AHA guidelines for CABG suggest that improvement in QoL is a primary indication of CABG. This study revealed significant improvement in QoL after CABG in both men and women, which is supported by published literature. There were significant improvements in all domains of QoL except the socio-economic domain. The improvements may reflect either the effects of surgery or factors linked to the surgery (e.g. the post-operative rehabilitation program of prescribed exercise, diet and smoking cessation lasting 3 weeks to 3 months). However this study was not aimed at identifying what caused the improvement in QoL. The lack of improvement in the socio-economic domain may be attributed to inadequate time for expected improvements in socio-economic status following CABG, as the post-operative patients were recruited within only 10-15 months after surgery.
QoL changes with gender

Our results indicate that there are no substantial gender differences in QoL both before and after CABG. Both men and women experienced a comparable improvement in their QoL. Our findings are consistent with studies [27,29] which show similar improvements post-CABG in QoL, in both genders. However, the pattern was somewhat different for women and men in our study. Women reported increased scores on many scales whereas men demonstrated higher scores only in the family domain of QoL. Other studies [15,17,19,22] do not support the findings of a similar pace of recovery, but rather found a poorer recovery in terms of QoL in women. The non-significance of gender difference may be due to the small sample size of the present study.

In one study [19] of 792 men and 198 women, women did not have the same degree of improvement after one year compared with men. Similarly, in one study [15] with a follow up with six months that matched 40 men and 40 women for age and body surface area, female gender was an independent predictor for impaired QoL after CABG. However, the explanatory power and validity of studies might be limited by either small sizes and/or different time frames. And also, after surgery, the traditional role demands may be particularly stressful for women and may thus enhance the disparities in QoL.

QoL changes with age

In our study, QoL in post-CABG group improved regardless of age. Age of 60 years was used as the cut off to refer the elder population in this study. We found that preoperative QoL scores were similar and QoL improved post-CABG in patients older and younger than 60 years of age. Older patients showed better improvement on overall QoL. These findings suggest that older patients can expect the same QoL improvements post-operatively as their younger counterparts.

With regards to other studies [17,22] our findings demonstrated that, there was a significant improvement of QoL in health and functioning domain in > 60 years group compared with their <60 years group. A possible explanation for this finding is that younger patients faced different challenges in their post-operative lives with higher expectations at home and work.

There are several limitations identified in this study. The sample size is small and it was difficult to match pre-operative subject with post-operative on age, gender and BMI. Pre and post-operative QoL may be influenced by factors such as non cardiac problems, pre-operative, peri-operative and post-operative surgical complications which were not evaluated.

Conclusion

This study focused on the evaluation and comparison of the QoL before and after CABG. There was statistically significant improvement of QoL in post-operative patients in all three sub domains and overall QoL, except socio-economic sub domain which did not show significant improvement after the surgery. These improvements were obvious regardless of age and gender. However, in the health and functioning sub domain there was a significant improvement of QoL among elder population compared to their younger counterparts. Larger studies using a more representative sample, especially prospective studies which also consider co-morbidities would be useful in strengthening the above findings.
References


Informed consent, is it enough?

Darlene C Kulhawy

Royal Alexandra Hospital, Edmonton, Alberta, Canada

Abstract

It was investigated to determine how effectively an individual would retain and recall information delivered to them approximately 6 months prior to cataract surgery. The information was delivered as part of the informed consent by the Doctor, and the legal consent was signed just prior to the cataract surgery starting. The questionnaire was given to one group of patients before the surgery, and the same questionnaire given to another group after the surgery was complete. Although information was delivered with intention to have informed consent, patients did not completely understand the procedure they were having. Ways to deliver information were researched and have been outlined in the presentation.

Keywords: informed, consent, retention, communication

The process of informed consent is widely accepted as basic standard of care for any significant medical procedure and is based upon the ethical and legal principle of autonomy. Central to the principle of autonomy is the role of the patient as the key decision-maker. The process of informed consent is one that involves explanation of the procedure and disclosure of potential risks and proposed benefits. It is based on the expectation that patients assimilate and weigh information against their own value structures and health expectations and then decide for or against undergoing the procedure.¹

Research Project

With Christopher Hansen MD PGY-4 and Dr Ian MacDonald in the Ophthalmology at the Royal Alexandra Hospital, a group of over 80 patients were studied to measure the recall and understanding of cataract surgery and their informed consent. ⁴

Our Results

Only 56.16% of our patients were able to correctly answer where a cataract formed (in the lens of the eye) and specifically/vaguely what a cataract was. The information was delivered in 6 different surgeon’s offices (participants of the research project) with similar formats of brochures and education by clinical staff.

In comparison with other research, our patients were consistent in their retention of information delivered to them, as compared to other studies.

Communication

Communication is essential for the effective delivery of health care, and is one of the most powerful tools in a clinician’s arsenal. ¹² Unfortunately, there is often a mismatch between a clinician’s level of communication and a patient’s level of comprehension. In fact, evidence shows that patients often misinterpret or do not understand much of the information given to them by clinicians. This lack of understanding can lead to medication errors, missed appointments, adverse medical outcomes, and even malpractice lawsuits.²
Six steps to improving interpersonal communication with patients

1. Slow down: Communication can be improved by speaking slowly, and by spending just a small amount of additional time with each patient. This will help foster a patient-centered approach to the clinician-patient interaction.

2. Use plain, nonmedical language: Explain things to patients like you would explain them to your grandmother.

3. Show or draw pictures: Visual images can improve the patient’s recall of ideas.

4. Limit the amount of information provided— and repeat it. Information is best remembered when it is given in small pieces that are pertinent to the tasks at hand. Repetition further enhances recall.

5. Use the “teach-back” technique: Confirm that patients understand by asking them to repeat back your instructions.

6. Create a shame-free environment: Encourage questions. Make patients feel comfortable asking questions. Consider using the Ask-Me-3 program (What is my main problem? What do I need to do? Why is it important for me to do this?)

Enlist the aid of others (patient’s family or friends) to promote understanding.5,6

Conclusion.
When medical professionals use communication skills effectively, both they and their patients benefit. Firstly, doctors can identify their patients' problems more accurately. Secondly, their patients are more satisfied with their care and can better understand their problems, investigations, and treatment options. Thirdly, patients’ distress and their vulnerability to anxiety and depression are lessened.14
References

Knowledge, Attitudes and Practices of Public Health Midwives in the District of Kalutara on Revised Maternal Care Package and Issues Faced by Them in Implementing the Package

E A R Deepani Edirisinghe¹, D.K. Nilmini N. Hemachandra²,

Base Hospital – Horana, Ministry of Health, Sri Lanka¹, Family Health Bureau, Ministry of Health, Sri Lanka²

Abstract

Successful maternal care programme in Sri Lanka was reviewed in 2007 to minimize the underutilization of available resources, by pass phenomena, duplication of service and to improve the quality of care. To overcome these gaps a revised maternal care package was introduced in 2011.

One year after the implementation, this cross sectional descriptive study was carried out in Kalutara district, western province with the objectives of assessing knowledge, attitudes, and practices of the public health midwives on the revised maternal care package and issues faced by them in implementing the package.

Pre tested self-administered questionnaire was used among 375 Public Health Midwives working in Kalutara district from August to September 2013 to assess knowledge and attitudes.

The mean score for the overall knowledge was 86.3%. For the different components of the maternal care, 75% of them had scored more than the average except for the antenatal clinic care, antenatal domiciliary care and assessment of Edinburgh post-partum depression scale. Mean score for the attitude questionnaire was 85.2%. Nearly 25% of the population had negative attitudes towards the birth and emergency plan, relationship between field and institutional staff, achievability & feasibility of the package.

The knowledge vs the attitudes and the service experience vs the attitudes had shown a significant statistical association.

Key words: Revised maternal care package, Public Health Midwife, antenatal care, maternal care

Introduction

National maternal care programme in Sri Lanka is one of the successful low cost models in the world. It ensures the concepts of safe motherhood, continuum of care across health system and packaging of interventions since its commencement. Almost all the evidence based interventions recommended by the WHO as population based interventions during pre-pregnancy, pregnancy; delivery and postpartum period are included in the maternal care package (World Health Organization, 2010). The maternal care services are provided through well-organized clinic system and domiciliary care service delivery system which is link with the referral care facilities where comprehensive emergency obstetric and neonatal care services (EmONC) are available. Shared care is used whenever possible to ensure the quality of care.

Sri Lanka has been achieved wonderful health indices due to provision of comprehensive maternal care package with evidence based intervention, use of professionally trained health personals in the field and institutions. Some of these promising health indices are MMR - 31.13 per 100,000 live births (Family Health Bureau, 2010), IMR 9 per 1,000 live births, 99% pregnant women received maternal care during pregnancy (Department of Census & Statistics, 2006/2007) and 99% received trained assisted delivery, 99% deliveries taken place in hospitals (Family Health Bureau, 2010) and 98% of pregnant women received antenatal care from the government sector. Even though we have achieved so many successes in maternal care some gaps and challenges can be identified in certain areas such as quality of care, geographical disparity and postnatal care. To overcome this gaps and challenges there is a need of targeted interventions, equitability of service provision and quality of care. Therefore in 2007, Maternal and newborn programme of Sri Lanka was evaluated by a team of national and international experts and commented that even though we have enriched with good health indicators, the gap such as underutilization of available facility, bypass phenomena, not having good referral system, duplication of work, shortage and inequitable distribution of human and other resources has hampered the future improvement of the indicators. The recommendation of this review was to revise the maternal care service delivery model and package to prevent duplication of services and to improve the quality of care and to adopt evidence based antenatal care strategies (World Health Organization, 2007). Further, the maternal care service delivery model use in Sri Lanka was introduced in 1970’s where substantial proportion of births took place at home. Today 99.9% of births take place in the hospitals and nearly 7000 public health midwives and 3500 clinic centers provide the maternal care other than the seventy two hospitals (Family Health Bureau, 2011) where service of a specialist obstetrician is available. Therefore, the need of revising the existing maternal care package was highlighted in many forums to accommodate the current scenario.
The revision of the package was done by a group of experts in relevant fields considering the strength and weaknesses of existing model, national policies, equity, health delivery system, changing expectation of public, and socio economic changes of the country (World Health Organization, 2007). Further it reviewed the recommended antenatal care service delivery models and packages in the world. The revised package was pilot tested in Kandy and Ratnapura district in 2011 and scaled up throughout the country by 2013. The revised maternal care package was introduced to the Kaluthara district in February 2012 and it has been practiced in the district for more than one year. With this implementation, in depth training programme was conducted to train the public health staff to introduce the new guidelines of the package. At this stage of the implementation, it is essential to see how the new package is implemented by the public health staff. Further, adherence to the new service delivery guidelines and knowledge of public health staff on revised maternal care package need to be assessed. The attitude of public health staff on the new developments introduced will help the programme managers for further improvement of the maternal care in the country. With the evidence of the study done by Conrad, P. et al., in rural Burkina Faso, Uganda and Tanzania revealed the importance of evaluating the compliance of health workers in relation to the implemented antenatal care guidelines (Conrad, Schmid, Tientrebeogo, Moses and Kirenga, 2012). Therefore, findings of this study can be used to identify the areas to be improved further and planning of in-service training programme and to develop new strategies. Also it will be a good opportunity to the care givers to discuss and express their views regarding the revised package. And it will be a self-assessment of their work and knowledge.

General Objective

To assess knowledge, attitudes and practices of Public Health Midwives in the district of Kalutara on the revised maternal care package and issues faced by them in implementing the package.

Specific Objective
1. To describe the knowledge and attitudes of public health midwives towards the revised maternal care package in Kalutara district.
2. To determine the practices of public health midwives according to the service delivery guidelines provided with the revised maternal care package in Kalutara district.
3. To describe the issues faced by the public health midwives in implementing the revised maternal care package in Kalutara district.
4. To determine the associations between knowledge and attitudes towards the revised maternal care package with age, service duration and training on revised maternal care package of the public health midwives in Kalutara district.

Methods

This study was a descriptive cross sectional study which consists of three components.
Component (a): Assessment of knowledge and attitudes of public health midwives on revised maternal care package using a self-administered questionnaire.
Component (b): Assessment of the practice of public health midwives on service delivery guidelines provided with new package using a check list
Component (c): Assessment of issues faced by them in implementing the revised package in Kalutara district using focus group discussions.
The study was conducted in all Medical Officer of Health (MOH) areas in the district of Kalutara which was 13 in number. They were under two administrative settings. Eleven MOH areas were in the Regional Director of Health services division and two MOH areas were under the National Institute of Health Science (NIHS), Kalutara. Total number of public health midwives was 396.

Study Instruments

Component (a)
Pretested self-administered closed ended questionnaire with 20 multiple choice questions were used to assess the knowledge of Public Health Midwives on the revised maternal care package. Construction of questionnaire was done by the principle investigator based on revised maternal care guidelines, which was introduced by Family Health Bureau (Family Health Bureau, 2011). Content of the questionnaire was mainly divided into antenatal and postnatal care. Following areas of antenatal care were mainly considered in the assessment, knowledge on antenatal care as general, antenatal clinic care, domiciliary care and knowledge on antenatal investigations and immunization. Also the knowledge on antenatal risk, clinic procedures and the emergency preparedness were assessed. In post-partum care mainly assessed the knowledge on post-partum domiciliary care, risk condition and the screening tool of post-partum depression.
For the assessment of attitudes, pre-tested self-administered questionnaire was used. The questionnaire was prepared by the principle investigator considering the expert opinion. Eleven closed ended statements were included in the questionnaire and it was assessed by using Likert Scale.

These statements were constructed considering the major changes included in the revised maternal care package. The attitudes of PHMs on new schedule of domiciliary visits, clinic visits, introduction of antenatal classes, maintaining of weight gain chart, symphysio-fundal height chart, and birth and preparedness plan were assessed. Also attitudes on new pregnancy record, relationship between field staff and institutional staff, and practicability of the new guidelines were assessed.

Component (b)
A checklist was used to assess the practices of PHM according to the service provision guidelines. It was mainly based on new Pregnancy record part 512A. There were 27 practices in the check list. It included the majority of basic practices recommended in the revised maternal care package which were representing the antenatal history, antenatal risk assessment, antenatal investigation, immunization, monitoring of maternal and foetal growth, family planning, birth and emergency preparedness plan and post-partum domiciliary and clinic care.

Component (c)
Interviewer guide was used to facilitate the focus group discussion. It was mainly concentrated on the awareness of the changes that were included in the new package and their issues attitudes and perceptions towards the package. They had given an opportunity to express their opinion on new schedule of antenatal home visit, clinic appointments, investigation package, birth and emergency plan, new pregnancy record, and the maintenance of revised weight gain chart and the kick count chart. Also in the discussion they elaborated on both benefits and disadvantages faced by them in implementing the revised package. Then they had an opportunity to propose new suggestions for further improvement of the package.

Results
The age of the study population ranged from 24 years to 60 years and Mean age was 42.4 years. It was important to note that 14 (3.7%) of PHMM were graduates and the majority (72.3 %, n=271) had advanced level qualification. Mean service experience was 15.1years and nearly two third (66.7%, n=250) of midwives had a working experience of more than 10 years. Among the study population majority (n=272, 72.6%) were undergone the training on revised maternal care package. It is important to note that almost 1/3rd of the study population resided outside the area. Approximately 70% of Public Health Midwives were resided within the 10km from their service station.

As analysis of the data had shown the skewed distribution of knowledge and therefore describe as quartiles. According to the mean marks obtained, cut off point of scores were decided and categorize the knowledge into ‘Very good’, ‘Good’ and ‘below Good’.

The mean score for the overall knowledge was 86.3% and 72.5% of the participant scored more than the average for the assessment. For the different components of the maternal care, 75% of them had scored more than the average except for the antenatal clinic care, antenatal domiciliary care and assessment of Edinburgh post-partum depression scale.

However, only 81% thought that pre- preparation of the clinic is a responsibility of the areas PHM. Only 50.7% knew the recommended period for confirmation of the date of pregnant mother and 59% of the study population identified the correct duration of confirmation of placental position.

However, the new recommendation on number for home visits for low risk pregnancies only knew by 72% of participants. Only 15.7% of the participants knew the correct schedule of home visit for mothers with previous history of still births and neonatal deaths. Regarding Edinburgh post-partum depression scale nearly 80% of participants had considered it as a diagnostic test and only 17% had a clear idea of cut off marks for referral.

Mean score for the attitude questionnaire 85.2%. The majority of participants had good attitude toward the revised maternal care package. They reported highest positive attitudes (almost 100%) towards the antenatal sessions, introduction of the weight gain chart and for most of others areas had scored more than 90%. Nearly 1/4th of the study population was having negative attitudes towards the birth and emergency plan, relationship between field and institutional staff, achievability & feasibility of the package.

There were no statistically significant associations between the knowledge of PHMM with their age, service experience and their training on the package as the p value was more than 0.05.

There was a statistically significant association between knowledge vs the attitudes (χ² = 7.449, p = 0.006) and the service experience vs the attitudes (χ² = 3.867, p = 0.049) in the study population.

There were no statistically significant associations between attitudes vs age and their training on revised maternal care package of the public health midwives in the study population (P > 0.05).
Discussion

The revised maternal care package was piloted tested in 2011 and scaled up throughout the country by 2013 after intensive training programme for the service providers of both curative and preventive health sector. By the time of study, the revised maternal care package was practiced in the district for more than one year. At this stage it is important to assess the compliance and the perceptions of the service providers with the new guidelines in the revised package. Many studies in the world have emphasized the importance of evaluating the compliance of the health staff towards the service delivery guidelines (Conrad et al, 2012). The study done by Gunathunga & Fernando (2000) revealed that the sound knowledge of the public health staff was an essential factor to have better compliance on service delivery guidelines. Aubel, Rabie & Mukhar (1991) had pointed out that importance of the health worker’s attitude in relation to their performance. Therefore, this cross sectional descriptive study was carried out in the Kalutara district to assess the knowledge, attitudes and practices of the Public Health Midwives on the revised maternal care package. Several methods were applied to collect relevant information from the study population including self-administered questionnaire for the assessment of knowledge and attitudes.

When comparing with the study of Gunathunga & Fernando (2000), significant difference was not seen in the distribution of the age and the marital status of the two study population. However, 35% of the participant had less than 5 years of service experience in previous study when compare to that of 12% in this study population. The majority 72.3% were A/L qualified in contrast to previous study where most of them were (95.5%) O/L qualified. Even though they were expected to live in the area of service, only 66.1% of the study population were resided with in the area but it was better than earlier study done by Gunatunga & Fernando (2000) which reported only half of them were in the service area. It was important to note that 66.7% were resided more than 10 km from the service area. Above two findings was coincided each other as those who resided outside the area were reside more than 10km from their service area. As a field health officer, residing in the area is expected as they are trained to manage obstetric emergencies. However, with the current scenario of 99.9% of deliveries taking place in hospitals (Family Health Bureau, 2011), mandatory residing in the service delivery area can be reconsidered as it is not practice any more. Nearly one fourth of the study population had undergone training of revised maternal care package.

The study concluded that the overall knowledge of the participants on the service delivery guidelines of revised maternal care package were good (72.5%) with resulting the mean score of 86.3%. However, significant differences were observed when knowledge on different components was examined. The knowledge on the antenatal clinic care of the study participants was not up to the expected level as 55 % (n= 208) of them were score below the average. Most of them were failed to answer the components in relation to shared care of the mother indicating the poor relationship between them and the referring institutions. Further this was proven by their negative attitudes towards the relationship between field and the hospital staff. One quarter (26.1%) of the study population had negative attitudes with the statement of “revised maternal care package strengthen the relationship between field and institutional staff”.

When consider the procedures and prophylactic treatment in the field clinic, they had shown better compliance on the provided guidelines and it was evidenced by their positive attitude towards the antenatal clinic schedule (94.4%). However, in the focus group discussion they were not agreed with the new antenatal clinic schedule as they were still not identified the benefits of practicing it in the field. And it can be corrected with better guidance and supervision by the supervisory staff.

With regards to antenatal domiciliary care, main issue was the poor knowledge on antenatal home visit for the risk mothers. It implied that they may not follow the guidelines or poor attitudes towards the recommendation or may not be educated adequately. Anyway, 94.4% of the participant had reported positive attitudes towards having two different schedules of home visit for low risk and the high risk mothers. Even though the knowledge of the investigation package was found to be good, it was not compatible with results of the practices of the study population as the availability of PPBS at booking was 68.2% and availability of Hb reports was 79.6%. However, it was better when comparing with the annual report of family health which reports only 57.8% (Family Health Bureau, 2010). At 28 weeks of gestation only 59.9% and 61.1% had done the PPBS and Hb and reported in the pregnancy record. The compliance on screening for blood group was good and comparable with the national statistics (Family Health Bureau, 2010). This observed difference was confirmed by the focus group participant giving various reasons but they were totally agreed with the new investigation package. According to their view this was mainly due to cost and the un-availability of testing facilities. On the other hand it could be due to poor record keeping of the PHMM in the field clinic.

The study participants performed well in immunization assessment. Nearly three quarter of them had scored 100% for the assessment of knowledge on the Tetanus toxoid immunization and it was further strengthen with the evidence of their practices. Identification of status of the Tetanus immunization was 99.3% and that was compatible with the data in Annual report of family health i.e.99.9% (Family Health Bureau, 2010).
Identification of the status of Rubella vaccination status was 98.9% in the study and it was reported better than statistic. 95.4% in the Annual report of family health (Family Health Bureau, 2010).

Antenatal session was a newly introduced concept to the maternal care package but they had good knowledge with positive attitudes which was further reinforced by their practices and the focus group discussions. When the antenatal clinic procedure were considered, the knowledge of the PHMM was good mainly the maintaining of weight gain chart. The majority of the study population (97.9%) had positive attitudes towards this intervention and it was further strengthened by having good practice in the field. Nearly almost all the participants in the focus group agreed with it as one of the good intervention in the package.

The introduction of the birth and emergency preparedness plan in the pregnancy record (512A) was found to be mostly criticized intervention of the revised maternal care package but they had scored good marks in the assessment of knowledge and reported good practices in the field. However, in the qualitative assessment, they had totally different view on the intervention which was not evidenced in the assessment of knowledge and attitude. They were not totally agreed with the following interventions. According to their view, ‘Birth and emergency Preparedness Plan’ was difficult to practice in the field. They were not agreed with allocating a space for ‘Expected period of delivery’ and allocating too much of space for details of ‘Syphilis Screening’.

Even though there were few issues with newly introduced pregnancy record majority of them had positive attitude and it was evidence in their practices. Practices in relation to antenatal investigation, record keeping of SFH, post natal clinic visit and the component of family planning were not performed as expected.

With regards to maintenance of the SFH graph, it was mainly due to poor documentation and the misinterpretation of the guidelines. The focus group discussion revealed that they were not identified it as their responsibility.

The reasons for poor performance of family planning were mainly due to the poor post natal clinic visit of the post-partum mother at the 4-5/52 weeks of puerperium. It was reported as very low 58.6% and it may be due two reasons, actually post-partum mothers were not reviewed in the post-partum clinic or the poor documentation of the visits. By performing an observational method this limitation could have been overcome.

Also there were controversies opinion on including the contact number of the PHMM in the pregnancy record but it was not supported by their performance as 91% of them had included their personnel telephone number in the record as they had identified the benefits of it not only for mothers but also to the care giver.

Knowledge on post-partum care was good in both domiciliary care (79%) and post-partum danger signals (92.5%) and it was not compatible with study done by Gunatunga & Fernando (2000) where only 69% of the participants had good knowledge on post-partum care.

The knowledge on Edinburgh postpartum depression scale (EPDS) was not up to the standard as their means median and mode were less comparatively to other components in the package. The lowest performance was observed with the knowledge on post-partum depression scale. This may be due to less awareness of the recommended guidelines, the practical issues or the poor compliance. During the qualitative assessment they clearly mentioned that it was difficult to practice in the busy clinic. However, they had positive attitudes towards the post-partum domiciliary care and the post-partum depression scale. Important to note that completion of post natal clinic visit was only 58.6%. So it was a good evidence to say that probably they were not practicing the EPDS in the clinic.

According to the study done by Gunatunga & Fernando (2000) the total knowledge decreased with increasing the age and the service experience of the PHMM. However, it was not evidenced in this study population. It could be due to the difference between the sample size and the age composition of the two population as 63.5% were between the of 30 years to 49 years in this study and 70.5% in the previous study Gunatunga & Fernando (2000).

Also there was no significant association between the knowledge and the level of education and the training of the revised maternal care package. The study done by Sipsma, Curry, Kakoma, Linnander & Bradley (2012) had evidenced that there was no statistically significant association between the training and increased use of recommended practice.

There was significant association between the attitude of the study population and their service experience (Pearson chi-square=8.23, p=0.016) they had good attitude with increasing the service experience. Also there was significant association between the knowledge and the attitude of the study population (Pearson Chi-Square=7.449, p=0.006). Those who had good knowledge had positive attitudes on the revised antenatal package.

Overall knowledge and the attitudes of the study population were good in relation to the new intervention of the revised maternal care package. The study concluded that the participant had good compliance with all the service delivery guidelines provided with the revised maternal care package except the recommended antenatal clinic schedule and the home visit schedule in antenatal domiciliary care. According to the studies done in the world they had identified (Conrad et al, 2012) the deficiencies and difficulties of implementing the focused antenatal care guidelines. Also they had proven that all the recommended guidelines were not practiced by the health staff as expected (Sipsma, Curry, Kakoma, Linnander & Bradley, 2012).
Conclusions:

In conclusion majority of the study population had good knowledge and good attitude towards the revised maternal care package. Considering the qualitative assessment, majority of them are in good faith of revised maternal care package, except the schedules of antenatal clinic, antenatal home visits, the birth and emergency preparedness plan.

Recommendations:

The results of the study pointed out the service need of continuous professional development and the periodical assessment of the knowledge of the service providers. Also it is important to strengthen the supervision with correct guidance of the staff and increase the availability of necessary facilities for the maternal care. There should be a service appraisal mechanism to motivate the service providers specially the field health staff. Also the study finding can be used to improve the maternal care in the district by the relevant administrators.

References:

Home Education Impact on Peritoneal Dialysis-Associated Peritonitis Episode in AL Medina- KSA.

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Abstract

The present study was aimed to evaluate the impact of home education on peritoneal dialysis (PD)-associated peritonitis episode in AL Medina- KSA. Thirty patients' on home PD were identified during their follow up visits to three dialysis units. Data were collected through three structured interviews questionnaire at their home via three tools; sheet for demographic characteristics and PD data and history, pre-posttests questionnaire for knowledge, and observational checklist for practice. Peritonitis episodes indicated by three cultures which were done at the times of; pretest, 3 and 6 months after posttest one. The main study findings revealed that 73.3% of the subjects were males with mean age of 26 year. A highly significant differences were found among pre and posttestone of knowledge part \( t(27.892) \quad p< (0.001) \), pretest-posttest one and posttesttwo of practice part, \( t(8.475) \quad p< (0.001) \) and \( t(4.805) \quad p<(0.001) \) respectively. The three consecutive cultures results were showed peritonitis episode as followed (30%, 10% and 13.3%). Positive impact was showed on minimizing peritonitis episode in PD patients following home education but by time spent the patients’ compliance declined. Thus periodical refreshment home education provided by experienced nurses is critically needed to maintain standardized PD practice.

Key words: Home education nursing, PD-associated peritonitis.

I- Introduction

Peritoneal dialysis (PD) is an accepted treatment modality for end stage renal diseases patients. Over 65% of patients are receiving PD live in developing countries. PD modality is offering patients an effective treatment that can be carried out at home and benefits patients’ quality-of-life, representing lower costs to the health care system. Out of 12,633 dialysis patients', 1196 of them were on peritoneal dialysis by the end of the year 2010. At the same time, 520 new patients have been registered at the year 2011 on peritoneal dialysis (Al-Sayyari & Shaheen, 2011 & Almaturity, Bonner and Douglas, 2013, and Saudi J Kidney Dis Transpl., 2013). Two main types of peritoneal dialysis schedules are possible. The first type is continuous ambulatory peritoneal dialysis (CAPD) involves multiple exchanges during the day usually three with an overnight dwell. The second type is the continuous cycler peritoneal dialysis is an automated form of peritoneal dialysis (APD) in which a manual daytime exchange (Al Sayyari & Shaheen, 2011 & Almaturity, Bonner and Douglas, 2013, and Saudi J Kidney Dis Transpl., 2013).

One of the most serious complications of peritoneal dialysis is peritonitis, which can develop because bacteria can enter the abdomen through or around the peritoneal dialysis catheter. Peritonitis was defined as clinical suspicion based on any of the following symptoms or signs; cloudy PD effluent, fibrin clots in PD effluent, abdominal pain, nausea, vomiting, diarrhea, constipation, fever, chills, abdominal tenderness, rebound tenderness, weakness, and oral temperature ≥ 37.8°C, together with peritoneal leukocyte count of 100/ml or more. These infections can usually be treated at home and resolve completely. Left untreated, peritonitis can become a life-threatening infection. Treatment typically requires one or more antibiotics, which are commonly given with the dialysate (Kerschbaum, König, and Rudnicki, 2012 and Kidney Health Australia, 2013).

Concerning peritonitis prevention, the PD patients' should demonstrated the procedure safely and effectively, trained to wash their hands before touching their catheters, clean their exit sites every day, wear surgical masks when doing exchanges and check solution bags for contamination. Also, patients are trained to spot the signs of an infection, include irritation around the catheter. PD training usually takes one to two weeks. Training is given to the patient as well as the patient's caregiver, if s/he has someone who helped with the PD procedure. Patients' need space to store PD supplies, running water, electricity and a sterile environment to do their exchanges. However, home training PD nurses should not be leave a patient alone to do his or her treatments until both the nurse and the patient feel that training has been completed and the patient is comfortable performing the treatments (Sadala, Bruzos, Pereira, and Bucvic, 2012). So, the present study was
conducted to evaluate the impact of home education on peritoneal dialysis-associated peritonitis episode in Al Medina- KSA.

II- Material and Methods

By utilization of quasi-experimental time series design the present study conducted, with a purposive sample of thirty patients' on home peritoneal dialysis modality for a minimum of six months recruited to the present study. The study participants' were identified during their follow up visits to three dialysis units in Al Medina - KSA. The data collected between periods of January 2013 to December 2013. For ethical considerations; a clear explanation of the nature and the aim of the study were given to the PD patients’ to obtain their informed verbal consent which included their rights for privacy and confidentiality during the orientation visit of the dialysis units. Tools for data collection were completed anonymously for confidentiality. Three tools were utilized to collect pertinent data included; I- Sheet for demographic data such as; age, sex, educational level, social status….etc, another sheet to collect data and history of PD modality and peritonitis such as; types of PD, period of PD therapy, numbers of peritonitis episode during the previous year, source for information and education..etc. The second tool was pre-posttests questionnaire for knowledge part incorporated; definition, signs and symptoms, observations of the exit site, infection control, and environmental sanitation. Total knowledge questions was 42 point, scored as (0= unknown or wrong answer and 1= correct answer). The third tool was pre-posttests of standardized observational checklist of home PD practice part. Total items was 21 steps, scored as (0= not done or incorrect and 1= done and correct). Peritonitis episode in the present study was detected by three cultures which done at the times of the pretest, three and six months after posttest one. The operational definition of peritonitis in the present study was white blood cell (WBC) count >100 cells/mm³ in the affluent sample taken, after a minimum dwell time of four hours (Ur-Rehman, Housawi, Al-Jifri, Kielar, Al-Ghamdi, 2011). A pilot study was done on 10% of the study participants to assure clarity and understanding of the tools. It also helped in the estimation of the time needed to fill the data collection tools. Accordingly, some minor modifications were made to the tools. The data collection was carried out through four structured interviews at patients' homes. Each interview took an average 60 to 90 minutes to complete. Data collections were carried out sequenced of pretest, posttest one after education, posttest two for knowledge and practice after six months from the posttests one. Cultures as peritonitis indicators were done at the pretest, three and six months after posttest one. The demographic data and pretests of knowledge and practice at the first interview were followed by education for both knowledge and practice. The impact of PD home education was correlated with the episode of peritonitis along 6 months post education. Based on literature review such as Crabtree (2012) a simple language booklet with illustrated pictures was developed by the researcher, in addition to video film produced by Mahmud (2012). The booklet mentioned definition, signs and symptoms, causes, management of peritonitis. Also, home modification, facilities, sanitation and infection control were involved. Early understanding and intervention of difficulties that may be arises to PD patient in relation to infections. Guidelines documented by Bernardini, Price, and Figueiredo (2006) adopted in the implementation of the home education for both knowledge and practice parts

Statistical Analysis: The data collected were tabulated and analyzed using SPSS version 16. Descriptive and inferential statistics were carried out included; frequencies, percentages, chi-squared test for qualitative variables, and paired t-test for quantitative variables. The level of significance was set at 0.05

III- Results

Table1. Demographic characteristics of the study participants according to peritonitis episode percentages of the study participants (n=30).

<table>
<thead>
<tr>
<th>Variable</th>
<th>No =30 (%)</th>
<th>Peritonitis episode at the pretest and posttests one and two</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 - 18 y</td>
<td>10 (33.3)</td>
<td>X² (7.200), P (0.027) S**</td>
</tr>
<tr>
<td>&gt;18-40 y</td>
<td>16(53.4)</td>
<td></td>
</tr>
<tr>
<td>&gt; 40</td>
<td>4(13.3)</td>
<td></td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>26±12</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>22(73.3)</td>
<td>X² (6.533), P (0.011) S**</td>
</tr>
<tr>
<td>Female</td>
<td>8(26.7)</td>
<td></td>
</tr>
<tr>
<td>Level of Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>6 (20)</td>
<td></td>
</tr>
<tr>
<td>Basic</td>
<td>8 (26.7)</td>
<td>X² (4.333), P (0.363) N.S***</td>
</tr>
<tr>
<td>Secondary</td>
<td>10 (33.3)</td>
<td></td>
</tr>
<tr>
<td>University</td>
<td>6 (20)</td>
<td></td>
</tr>
</tbody>
</table>
Table 1 describes the demographic characteristics according to the peritonitis episode of the present study participants. The mean age score ± SD was 26±12, males represented two third of the study participants, nearly two third were single and childhood (30.1 & 33.3%) respectively. All of these variables showed in significant differences with the peritonitis episode (P < 0.05). Also, 20% of the study participants were illiterate with no significant differences with peritonitis episode (P > 0.05).

Table 2. PD and peritonitis episodes history according to peritonitis episode percentages of the study participants (n=30).

<table>
<thead>
<tr>
<th>Variable</th>
<th>No=30 (%)</th>
<th>Peritonitis episode at the pretest and posttests one and two</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tools for data collection filled by:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The patient</td>
<td>19 (63.3)</td>
<td>X² (2.133), P (.144) NS***</td>
</tr>
<tr>
<td>patient’s family caregiver</td>
<td>11 (36.7)</td>
<td></td>
</tr>
<tr>
<td>Type of PD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAPD</td>
<td>18 (60)</td>
<td>X² (1.200), P (.273) NS***</td>
</tr>
<tr>
<td>APD</td>
<td>12 (40)</td>
<td></td>
</tr>
<tr>
<td>Duration of PD therapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 1 y</td>
<td>6 (20)</td>
<td></td>
</tr>
<tr>
<td>1-5 y</td>
<td>16 (53.3)</td>
<td>X² (15.600), P (.001) H.S*</td>
</tr>
<tr>
<td>&lt; 5-10 y</td>
<td>7 (23.4)</td>
<td></td>
</tr>
<tr>
<td>&gt;10 y</td>
<td>1 (3.3)</td>
<td></td>
</tr>
<tr>
<td>Episodes number of peritonitis during the last year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st</td>
<td>9 (30)</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>8 (26.7)</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>4 (13.3)</td>
<td>X² (10.800), P (0.001) H.S*</td>
</tr>
<tr>
<td>4th</td>
<td>7 (23.3)</td>
<td></td>
</tr>
<tr>
<td>5th</td>
<td>2 (6.7)</td>
<td></td>
</tr>
<tr>
<td>Is the patient educated about wound care?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>25 (83.3)</td>
<td>X² (13.333), P (0.000) H.S*</td>
</tr>
<tr>
<td>No</td>
<td>5 (16.7)</td>
<td></td>
</tr>
<tr>
<td>Sources of home PD education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nurse</td>
<td>9 (30)</td>
<td></td>
</tr>
<tr>
<td>Physician</td>
<td>19 (63.3)</td>
<td>X² (20.400), P (0.000) H.S*</td>
</tr>
<tr>
<td>Previous patient</td>
<td>2 (6.7)</td>
<td></td>
</tr>
<tr>
<td>Is the patient have previous technique failure because of peritonitis (shifting from PD to HD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1 (3.3)</td>
<td>X² (26.133), P (0.000) H.S*</td>
</tr>
<tr>
<td>No</td>
<td>29 (96.7)</td>
<td></td>
</tr>
</tbody>
</table>

H.S *= highly significant at the 0.01 level, S ** = Significant at the 0.05 level. NS*** = no significant differences.
Figure 1 illustrates the percentage of peritonitis episode as the following (30%, 10% and 13.3%) at the times of pretest, three and six months after posttest one. These episodes found correlated to the mean scores of knowledge & practice at the times of pretest, posttests one and two (13.2, 39.3 and 38.9) of knowledge respectively, and (17.7, 20.4 and 19.6) of practice respectively.

Table 3. Percentages of noncompliance knowledge and practices variables during pretest, posttests one and two of the study participants (n=30).

<table>
<thead>
<tr>
<th>Noncompliance knowledge and practices</th>
<th>Pretest No (%)</th>
<th>Posttest one No (%)</th>
<th>Posttest two No (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge about infection control</td>
<td>29(96.7)</td>
<td>0</td>
<td>13(43.3)</td>
</tr>
<tr>
<td>Hands not washed</td>
<td>2 (6.7)</td>
<td>0</td>
<td>5 (16.7)</td>
</tr>
<tr>
<td>Adherence to aseptic technique</td>
<td>28 (93.3)</td>
<td>0</td>
<td>1 (3.3)</td>
</tr>
<tr>
<td>Work surface not cleaned</td>
<td>16 (53.3)</td>
<td>9 (30)</td>
<td>21 (70)</td>
</tr>
</tbody>
</table>

Table 3 represents percentages of noncompliance knowledge and practices variables during pretest, posttests one and two of the study participants. Knowledge about infection control, hands not washed, adherence to aseptic technique and work surface not cleaned variables showed level of improvement between the pretest and posttest one. Meanwhile, all of these variables showed noncompliance of the posttest two.

Table 4. Paired t test for peritonitis episode, knowledge and practice at the pretest and posttests one and two of the study participants (n=30).

<table>
<thead>
<tr>
<th>Variable</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest and posttest one of peritonitis episode</td>
<td>2.693</td>
<td>(0.012) S**</td>
</tr>
<tr>
<td>Posttests one and two of peritonitis episode</td>
<td>-.441-</td>
<td>(0.662) N.S***</td>
</tr>
<tr>
<td>Pretest and posttest one of knowledge</td>
<td>-27.892-</td>
<td>(0.000) H.S*</td>
</tr>
<tr>
<td>Posttests one and two of knowledge</td>
<td>1.459</td>
<td>(0.155) N.S***</td>
</tr>
<tr>
<td>Pretest and posttest one of practice</td>
<td>-8.475-</td>
<td>(0.000) H.S*</td>
</tr>
<tr>
<td>Posttests one and two of practice</td>
<td>4.805</td>
<td>(0.000) H.S*</td>
</tr>
</tbody>
</table>

H.S *= highly significant at the 0.01 level. S ** = Significant at the 0.05 level. N.S*** = no significant

Table (3) indicates the paired t test for cultures, knowledge and practice through the pretest, posttests one and two of the study participants. The study findings revealed highly significant differences between pretest and posttest one of knowledge, pretest and posttest one of practice and posttests one and two of practice P< 0.01. Also, a significant difference was found between peritonitis episode of the pretest and posttest one P< 0.05 while there were no significant differences showed between peritonitis episode of the posttests one and two or between posttests one and two of knowledge P> 0.05.

IV-Discussion

The demographic characteristics of the study participants’ in the present study revealed that; the mean age was 26 years, two third of them were males. In shadow of frequent peritonitis, unfavorable potential pathway for PD patient may be occurred especially in this vital age group in any community. Also, it was found that, one third of PD patients’ was cared and managed by family caregivers. As well 20% of PD patient and their caregivers were illiterate that could be in respect factor in educating them to assure adherence with standardized PD procedure (table1). Russo, et al (2006) analyzed compliance and re-training needs of patients on PD through the assessment of patient knowledge and patient behavior. They observed that the greater need for re-training was for younger patients with lower education degree. Meanwhile, a qualitative study done by Sadala, Bruzos, Pereira, and Bucovic (2012) explored patients' experiences of peritoneal dialysis at home. The researchers mentioned that the nurses, due to their proximity with PD patients, they play a decisive role in the educational process, offer consistent and individualized assistance towards self-care. In the present study it was found that the nurse was the source for only 30% of the study participants and uninterestingly that (6.7%) were receiving their educational needs from previous patient.
In the present research the peritonitis episode, it was declined from (30% to 10%) after three months from the posttest one, then increased to (13.3%) after six months from the posttest one (Fig 1). These episodes of peritonitis were showed in significant difference with level of knowledge as well as the practice specifically. Some of the variables that showed level of noncompliance and associated with risk for peritonitis episode of the study participants’ include; knowledge about infection control, hands not washed, adherence to aseptic technique and work area not cleaned (table 3). These findings were consistent with Mawar, Gupta, & Mahajan, (2012), who found that the technique skill was similar across all the steps of the procedure. The most common improperly performed steps were: not putting on a face mask, not flushing the tubing system, and not washing hands. In addition to peritonitis occurred in 60% of poor performers, whereas fully compliant patients had no peritonitis. Also, they concluded that adherence to recommended aseptic technique is the cornerstone of peritonitis prevention. In line with Sharon, Joanne, Peter, Rosane, and Sarbjit (2009) and Alwakeel(2011) who observed that the overall improvement of clinical outcome of PD patients lead to decreasing the peritonitis episode and the factors affecting peritonitis should be corrected. Liawnoraset (2011) recommended that the PD patients and their caregivers should be educated about the importance of hygiene and exchanging methods to decrease the peritonitis episode. In addition, prolonging PD treatment, patients and caregivers alike in need to receive intensive education in preventing and treating peritonitis.

Based on their study, Brown, Simpson, Kerssens, and Mactier, (2011) suggested that it should look to the units and countries with lower peritonitis episodes to see if it can adopt successful elements of their practice before resigning ongoing peritonitis burden. Bordin, Casati, Sicolo, Zucherato, and Eduati (2007) described the characteristics of the education programs used in Italian PD-centers, evaluating a possible relationship between programs and peritonitis rates. They found that training occurs in all the centers, while pre-dialysis education, home visits and re-training take place; a lower peritonitis rates proved to be correlated to these activities rather than to presence of specialized personnel, to ratio nurses-patients or training time. The present study findings revealed highly significant differences between pretest and posttest one of knowledge, pretest and posttest one of practice and posttests one and two of practice. Also, a significant difference was found between peritonitis episode of the pretest and posttest one while there were no significant differences showed between peritonitis episode of the posttests one and two or between posttests one and two of knowledge (table 4). Mawar, Gupta, and Mahajan (2012) stressed on the importance of adequate training and retraining which is critical to the goal of decreasing the risk of peritonitis and maintaining the viability of the peritoneal membrane. As adherence of the procedure can be improved by retraining, compliance is a modifiable risk factor for peritonitis. In summary, there is a positive impact was showed on minimizing peritonitis episode in PD patients following home education in the present research but by time passed the patients’ compliance declined, thus periodical refreshment home education provided by experienced nurses may be critically needed to maintain standardized PD practice. Also, public awareness is performed through mass media, distribution of brochures, & pamphlets. Further research needed with larger sample to study peritonitis episodes with regard to risk factors and caregivers.
V-References:


Effectiveness of a Home Based Progressive Resistance Training Program in Reducing Pain and Disability in Patients with Osteoarthritis of Knee.

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Abstract

Aims: To determine the effectiveness of a home-based progressive resistance training (PRT) program in reducing pain and disability in patients with Osteoarthritis of knee. Methods: This randomized controlled trial, conducted for 30 days, included 60 subjects, diagnosed with Osteoarthritis of a single knee, recruited from a clinical setting in Colombo. The subjects were randomized to experimental (EG) and control groups (CG) (n=30) and received their general treatments. The EG received a PRT program to be performed at home and regular telephone contacts. Data was collected using a self-administered questionnaire under ‘Perceived pain, Perceived stiffness, Level of Activities of Daily Living (ADL) and Quality Of Life (QOL)’. Results: 50 (83.33%) subjects completed the study. Pain was reduced by 7.18% for EG and 0.46% for CG. Stiffness for EG was decreased by 15%, but was increased by 2.6%, for CG and similar trends were observed in levels of QOL and ADL for both these groups. Statistically significant improvements (p < 0.05) for four domains were present for EG, and between group differences were statistically significant (p < 0.05). Conclusions: The introduced PRT program with the scientific approach and compliance strategy were effective in reducing pain and disability in patients with knee Osteoarthritis.

Keywords: Knee Osteoarthritis, Progressive resistance training exercises, Pain

1. Introduction.

OSTEOARTHRITIS (OA) is a degenerative disease of joints resulting from wear of the articular cartilage, which may lead to secondary changes in the underlying bone (Oxford Medical Dictionary 2002, p. 494). It is a very common disease and may contribute largely to morbidity in the community (Felson et al. 1987). Because of the high prevalence of the disease, it has become a major issue in the community. Usually, treatment for OA includes both pharmacological and non-pharmacological treatments. Due to the beneficial effects seen across the range of disease severities, conservative non-pharmacological management strategies became a topic of research interest across the past century. Recently, prescription of exercises by practitioners has become a first-line conservative intervention approach for OA. The objective of this study was to discover the effectiveness of a home-based progressive resistance training (PRT) program in reducing pain and disability in patients with osteoarthritis (OA) of knee. Furthermore, it was aimed to identify the general level of perceived pain, stiffness, level of activities of daily living and quality of life in OA patients before conducting the PRT program.


2.1 Subjects.

Sixty patients with OA of a single knee were recruited for the study who were diagnosed with knee Osteoarthritis according to the records of Consultants or Medical Officers at a leading clinical setting in Sri Lanka. The subjects were being treated at the Physiotherapy department and were in between 40 – 65 years of age (Felson et al. 1987). Subjects were excluded if they had undergone surgeries on lower limbs (Deyle et al. 2000), had recent lower limb fractures during past 12 months or had intra-articular steroidal injections within last 3 months (Deyle et al. 2000) . In addition to that, subjects who were diagnosed with knee OA in both legs or any other inflammatory arthropathy such as Rheumatoid arthritis were excluded from the study. Furthermore, subjects who have medical conditions other than OA, which may interrupt with the exercise program (Deyle et al. 2000) and subjects diagnosed with psychological illnesses according to medical records were also excluded. Once the volunteer subjects who fulfilled inclusion and exclusion criteria were recruited, written consent was obtained after providing information regarding the study. Then the subjects were randomized to the Experimental Group (EG) and Control Group (CG) using Simple random sampling.
2.2 Outcome Measures.

Data collection was done using a self-administered questionnaire which takes about 15 to 20 minutes to be completed. The self-administered questionnaires were provided to all the subjects in both groups at the beginning, and baseline measures were established. The self-administered questionnaire was designed by the investigator with the aim of collecting subjective data under four main domains; perceived pain, perceived stiffness of the joint, level of activities of daily living and level of quality of life. In the questionnaire, there were 22 questions, divided under the 4 main domains. Each question consisted of 5 answers from 1 to 5 and a score was given to each answer according to the ascending order, hence a higher score indicates an increased severity and vice-versa. In addition to this, socio-demographic data of the subject was also needed to be filled. The questionnaire was validated and pre-tested before being used as the data collection tool. The questionnaire was validated by two rheumatologists and 3 physiotherapists. In order to test the comprehensibility, clarity and credibility of the questionnaire, it was pre-tested among 10 knee osteoarthritis patients at another clinical setting in Sri Lanka. A diary was also distributed among subjects of the experimental group which was designed by the investigator. This was required to be filled on a daily basis for the duration of the exercise program in which the number of exercises performed, total time taken to complete all the exercises and reasons for not being able to perform any exercise, if any, were required to be filled. This was given as a measure of increasing adherence to the exercise program.

2.3 Interventional program.

Once the baseline data collection was completed, an exercise program was introduced to the subjects of the experimental group and no exercise or intervention was introduced to the control group. The exercise program consisted of 3 exercises which were required to be performed once a day, on a daily basis for 30 days.

2.3.1. Isotonic quadriceps contractions at terminal extension:
The subject is required to sit on the bed with back supported against the head end. Legs are kept extended, with a rolled up towel kept under one knee. The subject contracts quadriceps muscle, lifting the ankle up, clearing the bed, and holds for five seconds (Kisner & Colby 2007). This exercise was required to be performed 3 sets of 8 repetitions everyday (ACSM 2010).

2.3.2. Isotonic quadriceps contractions:
The subject is required to sit on a chair and to lift the lower leg to partially extended position and to hold for five seconds (Sheila, Muir & Doherty 1999). This exercise was required to be performed 3 sets of 8 repetitions everyday (ACSM 2010).

2.3.3. Isotonic hamstring contractions:
The subject is required to lie prone on the bed and to bend the knee bringing the foot towards the body (Sheila, Muir & Doherty 1999). This exercise was to be performed 3 sets of 8 repetitions everyday (ACSM 2010).

The exercise program was designed in such a way that the exercises were easy to be performed at home with minimum economic cost and side effects. The subjects were asked to perform these exercises without using any resistance for first 15 days and then to increase the resistance during next 15 days by using cuff weights bound around the ankle joint of the exercising leg which were provided. The cuff weight weighed 400g (Kisner & Colby 2007). The towel which was to be a bath towel, was needed to be rolled up in such a way that the height should be 10 cm once kept on a flat surface. (Sheila, Muir & Doherty 1999). The subjects of the experimental group were contacted over the telephone for several times. Problems pertaining to the program were clarified. This strategy of contacting over the telephone was carried out as a measure of increasing the compliance as it has been shown to improve adherence to exercise programs and to improve patient outcomes (Hinman & Bennell 2011). The subjects of both groups were contacted on the 30th day and an appointment was set for the reassessment. The self-administered questionnaire was again given to the subjects of both groups and data collection was carried out. In addition to this, the diary was also collected. The subjects of both groups were allowed to continue their general treatment for OA including exercises given by Physiotherapists.

2.4. Statistical Analysis and Ethical clearance.

It was analyzed using Statistical Package for Social Sciences (SPSS) version 17.0, and was stored in a household personal computer. The level of significance was determined to be at a p value of less than 0.05. Socio-demographic characteristics of the study sample and the two groups were established by the usage of descriptive statistics. Independent sample t-test was used to analyse the relationship between these
characteristics of the two groups. Moreover, Independent sample t-test was used to establish the relationship between the baseline characteristics, post scores of the variables at completion and the difference of improvement levels. Paired sample t-test was utilized to analyze the pre and post scores of the variables to obtain the improvement levels. Ethical clearance was obtained from Ethics Review Committee (ERC) of the Faculty of Medicine, University of Colombo, Sri Lanka. Furthermore, permission was obtained from the director of the hospital and Consultant Rheumatologists of the department. Informed written consent was obtained from all the subjects after explaining the study, prior to being recruited to the study.

3. Results.

The response rate was 83.33% as only 50 subjects out of 60, completed the study. 26 (86.67%) subjects out of 30, of the CG completed the study and only 24 (80%) subjects out of 30, completed from the EG. Furthermore, all the subjects (n=60; 100%) recruited were females. No male subjects were recruited as nobody fulfilled the inclusion and exclusion criteria.

Table 1 shows the demographical characteristics of the subjects.

<table>
<thead>
<tr>
<th></th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean difference</td>
<td>t</td>
</tr>
<tr>
<td>1. Pain</td>
<td>1.339</td>
<td>2.035</td>
</tr>
<tr>
<td>2. Stiffness</td>
<td>0.904</td>
<td>2.110</td>
</tr>
<tr>
<td>3. ADL</td>
<td>3.654</td>
<td>2.141</td>
</tr>
<tr>
<td>4. QOL</td>
<td>1.584</td>
<td>2.060</td>
</tr>
<tr>
<td>Other</td>
<td>4 (13.3%)</td>
<td>6 (20%)</td>
</tr>
</tbody>
</table>

4. Analgesic usage

| Only when pain exacerbates. | 9 (30%) | 7 (23.3%) |
| Once a day                  | 9 (30%) | 6 (20%)   |
| Twice a day                 | 12 (40%)| 17 (56.7%)|

5. Involvement of the OA leg.

| Right                      | 18 (60%) | 19 (63.3%) |
| Left                       | 12 (40%) | 11 (36.7%) |

Table 2 below shows the general levels of perceived pain, stiffness, quality of life and activities of daily living at the beginning of the study showing the baseline measurements of the study sample. No statistically significant difference was observed between the control and experimental groups. As evident from Table 3, statistical significance was found throughout the four variables with regard to the difference of pre and post scores.

Table 2. Baseline measurements of the sample

<table>
<thead>
<tr>
<th></th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>1. Perceived pain</td>
<td>16.90</td>
<td>3.960</td>
</tr>
<tr>
<td>2. Perceived stiffness</td>
<td>5.33</td>
<td>1.422</td>
</tr>
<tr>
<td>3. Activities of daily living</td>
<td>25.80</td>
<td>7.402</td>
</tr>
<tr>
<td>4. Quality of life</td>
<td>8.63</td>
<td>2.512</td>
</tr>
</tbody>
</table>

Table 3. Relationship of differences in scores of variables.

* P<0.05
4. Discussion.

The dropout rate for experimental group (20%) was higher than for the control group (13.33%) despite regular telephone contact. However, the reasons given for the dropouts were unrelated to the exercise program or the study. This inequality in dropouts could be observed in many studies including Deyle et al. (2000) and Halim et al. (2013). Furthermore, all the subjects recruited in the study sample were females (100%; n=60), as male subjects did not fulfill the inclusion and exclusion criteria. The number of male patients attending the clinics at study settings was low when compared to the number of female patients. This finding is however, inconsistent with most of the studies, as certain research employed 20% of male subjects in the studies (Halim et al. 2013).

It was evident that 100% (n=60) of the subjects in the current study were under analgesics prescribed by the General Practitioner (GP) showing high prevalence of analgesic usage in this patient group. This is in accordance with the findings of Deyle et al. (2000), but contradicts the findings of Baar et al. (2001) in which analgesic usage was reported to be around 50% at the beginning of the study. This difference in analgesic usage may be attributed to the study designs, methods of recruitment and study settings, as the current study was solely based on hospital settings where the patients were recruited to the study from the physiotherapy clinics to which the patients are referred after being treated with medication by the GP. This usage of analgesics may have caused a self-reporting bias in data collection. Furthermore, the current study shows that the majority were having OA of right knee (60%) which is inconsistent with findings of Chaipinyo & Karonosupcharoen (2009) in which the involvement of OA of left knee was greater than that of right knee.

Most of the studies have sought to find the general level of pain and the effects of exercise on pain as it is found to be the chief complaint of this patient group. The current study found that the general level of pain among the subjects at the beginning was 54.4%. The mean levels of control and experimental groups showed no statistical significance (p > 0.05). This is in accordance with the findings of Foley et al. (2003), Baar et al. (2001). But these are not equivalent with findings of Sheila, Muir & Doherty (1999) and Doherty et al. (2002), in which the general levels of pain at the beginning was markedly lower. Also, in the study done by Chaipinyo & Karonosupcharoen (2009), the pain levels have been markedly increased and there was no significant difference between the groups. These differences may be attributed to the differences in study settings and methods of recruitment adopted by different research. Majority of research have employed stiffness as an outcome measure even though some studies, have not sought to find the stiffness levels (Callaghan, Oldham & Hunt 1995). Current study found that the general level for stiffness was 51.3%. Furthermore, there was no significant difference (p > 0.05) between the control and experimental groups and this finding is similar with studies done by Foley et al. (2003) and Baar et al. (2001).

Most of the studies done earlier, have sought to find the effects of exercise on physical activity as OA has been shown to have direct impact on functionality of patients (Fransen & McConnel 2008).The current study shows that the level of ADL for the study sample was 48.04%. These findings are consistent with Foley et al. (2003), and Chaipinyo & Karonosupcharoen (2009), but are inconsistent with the findings of Sheila, Muir & Doherty (1999), and Halim et al. (2013) as the physical function has shown to be smaller comparatively. Out of a plethora of studies, some have sought to find the QOL in terms of health perception, anxiety levels and etc (Sheila, Muir & Doherty 1999). Our study found that the level of QOL was 58.13%. This finding is similar to that of the study done by Halim et al. (2013) and shows inequalities with the study done by Chaipinyo & Karonosupcharoen (2009).

We found that a statistically significant improvement (p < 0.05) was present with regard to pain, for experimental group, when pre and post scores were compared, where the mean pain score was reduced by 7.18%. But, no statistically significant improvement (p > 0.05) was observed for the control group, even though the mean pain score was reduced by 0.46%. This reduction of pain in both groups could be attributed to the usage of analgesics and other means of treatments given at the settings. But, the greater improvement in experimental group could be directly related to the effects of exercises and the improved psychosocial contact. Also, this finding is consistent with the findings by Doherty et al. (2002), Sheila, Muir & Doherty (1999), Deyle et al. (2000) and Baar et al. (2001) in which they found that even though the pain scores were reduced in both groups, statistical significance was observed in experimental group, which was clinically important. In Deyle et al. (2000), the pain reduction for experimental group was 60% where as it was 20% for the control group. But, the authors also used manual therapy treatments with the exercises for the experimental group which might describe the larger percentage improvement in the perception of pain. The between group difference was statistically significant (p < 0.05) in the current study with regard to pain, and this is in good accordance with Sheila, Muir & Doherty (1999) and Deyle et al. (2000).
It was found that the stiffness was also significantly different \((p < 0.05)\) for experimental group. The findings reveal that the reduction for experimental group was 15\%, where as it was -2.6\% for control group, illustrating that the stiffness deteriorated slightly. No statistically significant difference \((p > 0.05)\) was observed for the control group. This improvement in experimental group can be attributed to the effects of exercise program and telephone contact sessions, but the decrease in the level of stiffness in control group cannot be explained clinically, though this may be due to recall bias. The improvement of stiffness in experimental group is in accordance with the findings of Doherty et al. (2002), and Deyle et al. (2000). In the study by Deyle et al. (2000), the improvement in stiffness for experimental group was 54\% and was 25\% in control group. But, our findings contradicts the findings of Foley et al. (2003) in which no difference was observed in the two groups. The between group difference was statistically significant \((p < 0.05)\) in the current study with regard to stiffness, and this is in good accordance with Doherty et al. (2002) and Deyle et al. (2000).

A statistically significant difference \((p < 0.05)\) was again seen with regard to the level of ADL, in the experimental group with pre and post score comparison. The improvement for experimental group was marked to be 6.31\%, where it was -2.41\% for control group where no statistically significant difference \((p > 0.05)\) was observed. This deterioration of control group, again cannot be explained clinically, but may be attributed to recall bias. The improvements in experimental group is in good accordance with Doherty et al. (2002) and Deyle et al. (2000). Sheila, Muir & Doherty (1999), in their study, show that the level of physical function was reduced in control group which is a similar finding with the current study. The between group difference was statistically significant \((p < 0.05)\) in the current study with regard to ADL, and this finding is consistent with Sheila, Muir & Doherty (1999).

Our study observed that a significant relationship \((p < 0.05)\) was present with regard to levels of QOL in the experimental group, when pre and post scores were compared. The improvement for experimental group was 12.3\% where as it was -4.73\% for control group. No statistically significant difference \((p > 0.05)\) was observed for the control group. This improvement in experimental group and deterioration in control group is difficult to be explained in clinical norms. But, it may be largely due to recall bias. These findings are similar with the findings of Sheila, Muir & Doherty (1999) where reduction of QOL was observed for control group in which it increased in experimental group. In Foley et al. (2003), and Halim et al. (2013) the QOL levels improved for experimental group and was not changed in the control group. Also, some research have completely omitted to assess QOL levels of subjects and has not considered QOL as an outcome measure (Callaghan, Oldham & Hunt 1995). The between group difference was statistically significant \((p < 0.05)\) in the current study, and this finding is consistent with Sheila, Muir & Doherty (1999) and Halim et al. (2013).

In the current research, continuous contact with a health care professional may also have influenced the improvements other than the effects of exercise program and the scientific approach in experimental group as the perception has been shown to differ with the contact of a health-care professional (Rene et al. cited in Halim et al. 2013). Furthermore, Rene et al. (1992) revealed that telephone contact alone was strong enough to create significant benefits in treatments in OA patients. Therefore, this may have caused self-reporting bias in the experimental group.

In the meantime, perceived reduction in knee pain and stiffness may have led to the improvements in ADL and QOL as there could be psychological effects involved with this. Similar effects have been shown in the study by Hewett et al. (1989). The exercises used in the current study, strengthen the muscles concentrically as well as eccentrically. But, strength of the muscles was not taken as a measure of outcomes which is similar to the studies done by Doherty et al. (2002), Deyle et al. (2000) and Halim et al. (2013). But, in studies done by Sheila, Muir & Doherty (1999) and Callaghan, Oldham & Hunt (1995), the muscle strength was measured and used as an outcome measure. Analgesics were allowed to be used in this study which is consistent with studies by Foley et al. (2003), Sheila, Muir & Doherty (1999), Callaghan, Oldham & Hunt (1995). And in some studies, analgesic usage has been used as an outcome measure (Baar et al. 2001).

The findings reveal that there is statistical significance with regard to perceived pain, stiffness, level of ADL and level of QOL between the experimental and control groups. Hence, the combination of exercises in this PRT program with the scientific approach and compliance strategy, can be utilized for female patients. Furthermore, the sample size of this study is not sufficient to arrive at a definitive conclusion with regard to clinical significance and studies with large sample sizes are required to draw a robust conclusion on clinical significance.
5. References.

Prevalence and Psychosocial Correlates of Depression during Antenatal Period in Pregnant Women of Medical Officer Health area Galigamuwa.

Jayakody J.M.S.N, Hemachandra N.M.

Introduction

Though we consider the pregnancy as a joyful event, it is not without problems. It is an event that involves numerous somatic and psychosocial changes in women. However, pregnancy can also be a potent stressor that can seriously affect the psychic status of the pregnant woman.

A WHO report on Global burden of disease (2004) has named depression as the greatest disease burden for women worldwide. Depression is twice as common in women as in men. The incidence of depression in women varies during her life span. The peak incidence during childbearing years appears to be associated with cyclic hormonal change. Women also present with reproductive specific mood disorders premenstrual dysphoric disorder, depression in pregnancy, post-partum mood disorders and perimenopausal depressive disorder (Sagud et al., 2002).

Epidemiological studies in western societies generally shows that about 10% of antenatal mothers and 13% of mothers with infants have significant mental health problems; depression and anxiety being the most common (Hendrick et al., 1998). Only few studies were done on this topic in low and middle income countries; according to Patel, et.al (2002), among women attending antenatal care services screening criteria for depression were met by 23% in Goa, 16% in Tamil nadu and 25% in Rural Pakistan. According to a study done by Rowel (2004), in Puttalam district in Sri Lanka prevalence and incidence of post-partum depression was 32.1% and 23.9% respectively while the prevalence of antenatal depression at 34 weeks of period of amenorrhea was found to be 25.6%.

Most of the risk factors associated with post-partum depression have been well researched, but correlates of antenatal depression have been less researched. Bronwyn and Milgrom (2008), were found that low self-esteem, antenatal anxiety, low social support, negative cognitive style, major life events, low income and history of abuse as significant predictors of antenatal depression.

Several scientific studies have shown that antenatal depression adversely impact on obstetric, fetal and infantile outcomes. According to the National maternal mortality surveillance system in Sri Lanka, 239 maternal suicides were reported during 2002-2010. Both number and rate increased over years to report a suicide rate of 12.1 per 100,000 live births in 2010; 48% were died during antenatal period (Jayaratne, 2013). Although we didn’t have data regarding their mental condition, a significant proportion may be attributable to depression. According to a study done by Bronwyn and Milgrom (2008), antenatal depression was the strongest predictor of post natal depression.

Sri Lanka has well developed and comprehensive antenatal and post natal care services; almost 100% pregnant mothers were registered for antenatal care and 99% receiving skilled attendance at birth (DHS, 2006/2007). Women received antenatal care from several places from filed clinic to specialized clinic to private sector. Although, the mental health is an important component of maternal care, the focus of maternal care programme on mental health aspects is not satisfactory. Identification of mothers with antenatal depression and their psychosocial correlates in the community allows us to help the affected and also useful in the planning of the preventive health care services. This will invariably reduce the post-partum disease burden and will improve the quality of life of the mother as well as her child and the family.

Therefore a community based study was designed to assess prevalence and psychosocial correlates of depression during antenatal period in pregnant women of Medical officer of Health area, Galigamuwa, in Kegalle district.

Methodology:

Study Design: Community based descriptive cross sectional study. Study setting: The Medical Officer of Health (MOH) division of Galigamuwa in the administrative district of Kegalle. MOH division of Galigamuwa has a population of 72,662; 94.5% of the population were Sinhalese, 4% were Tamils and 1.5% were Muslims. Study period: The study was conducted from 15th of September to 15th of November 2013. Study population: All pregnant women registered with the PHM in the MOH area Galigamuwa at the time of the study were enrolled in the study. Pregnant women who are mentally retarded were excluded. Sampling technique: In the MOH area Galigamuwa, annually around 750 women register for antenatal care. Therefore, at a given time there will be 375 pregnant women in the MOH area representing all three trimesters. As the required sample size for the study to establish community prevalence with a 95% confidence interval (CI) is 325, all the eligible pregnant women registered for antenatal care at the time of data collection were included in the
sample. **Study Instruments:** The data collection instruments were pre tested, self-administered questionnaires which contain the following sections: Socio-demographic information of the mother and the information on present obstetric history of the mother, Maternity social support scale (MSSS), Abuse assessment questionnaire (AAQ), Modified life events inventory (MLEI), Edinburg Postnatal depression scale (EPDS). Pre testing of the questionnaire was carried out at the antenatal clinics conducted at the MOH office, Kegalle before commencing the study proper. **Data collection:** The purpose of the study was explained to the pregnant women and informed written consent was taken. **Data analysis:** Data entry and analysis was done by using the Statistical Package of Social Sciences (SPSS), version 17.0. Quantitative data were described using frequency distribution and mean values. Qualitative data were presented using percentages. Socio-demographic characteristics and the psychosocial factors associated with antenatal prevalence of depression were tested for statistical significance by chi square test. A ‘p’ value of less than 0.05 was considered as statistically significant.

**Ethical Considerations:** Before administering the study instrument, ethical clearance was obtained from the Ethics Review Committee of Faculty of Medical sciences, University of Sri Jayawardanapura. Permission was also taken from the relevant authorities.

**RESULTS:** Age of the antenatal women in the study sample ranged from 17 to 40 years, with a mean age of 28 years (SD= 5.146) and most women (56.1%) were aged between 25 to 34 years. All the antenatal mothers and their spouses in the study population had gone to school. 82.9% of the mothers and 75.4% of their spouses had studied up to or above G.C.E Ordinary level. 84% of the antenatal mothers were house wives. Majority had a monthly income of more than Rs.5000 (78.3%). Most of the mothers in the sample were in the middle social class (59.8%).

**Prevalence of probable antenatal depression in the study sample:** EPDS scale was administered to the antenatal mothers as a screening tool for depression. Total score of 9 or more was obtained by 79 mothers out of 346 mothers. According to that antenatal prevalence of probable depression in the study group was twenty two point eight percent (22.8%).

The following factors were found to be significantly associated with the antenatal prevalence of depression: Low level of education of the spouse (p=0.002), total family income of ≤5000 rupees (p=0.002), low social class (p = 0.005), those who undergoing 4th or 5th pregnancy (p = 0.001), unplanned pregnancy (p = 0.001), those with pregnancy related complications (p=0.005), non-availability of social support (p = 0.001), ever physical abuse, physical abuse within last one year, physical abuse during pregnancy (p = 0.001), those with 2 or more life events (p = 0.001). Age, level of education and the employment status of the mother were not found to be associated with the antenatal prevalence of depression.

**Discussion:** In Sri Lanka maternal health care is an important component of the health care system and it’s an integral part of the primary health care. It is provided as a comprehensive package, and continuum of care throughout the pregnancy and throughout the health system free of charge is achieved in nearly 99% (FHB, 2011). Maternal mortality has reduced drastically throughout last 3-4 decades due to improved service delivery. But we have not taken maternal morbidities into consideration.

In Sri Lanka, reproductive age female (15-49 years) constitute 27.8% (Annual Health Bulletin, 2003) of the total population. Antenatal women represent the female of reproductive years and also a vulnerable group for common mental disorders especially depression. According to a study done by Abeysena (2002) in Sri Lanka, psychological stress was detected in 24.7% of the antenatal mothers during third trimester of pregnancy. Above findings also show the importance of considering mental health assessment during antenatal period. EPDS scale has been introduced to the new maternal care package recently to screen post-partum mothers for depression. Although health care workers mainly PHMM deliver lectures to improve maternal physical as well as mental health during antenatal classes which are held in each trimester according to new maternal care model, there is no established way of screening antenatal mothers for psychological morbidities in our system.

Main objective of the present study is to determine the antenatal prevalence of depression, which is a useful measure to project medical care needs of the antenatal mothers as described above. EPDS scale was used in the present study as a screening tool for depression, total score of ≥9 was taken as probable depression. Probable depression prevalence among the antenatal mothers in the study group was 22.8%. The results are consistent with 2 other Sri Lankan studies. According to a study done by Rowell (2004), antenatal prevalence of depression at 34 weeks of POA was 25.6%.

In comparison to most recent studies from India and Bangladesh, the prevalence of antenatal depression was high in the current study. The study done in India by Sood& Sood (2003), assessed 84 mothers at 3rd trimester with Beck Depression Inventory; the prevalence of depression was recorded as 8.3%. Bangladesh study by Nasreen et.al (2010), showed a 18% prevalence of depression in the last trimester of pregnancy.

Sri Lankan figures for antenatal depression prevalence was higher when comparing with the other regional studies of similar objectives. Although Sri Lanka is a South Asian country it has much socio-demographic
dissimilarity compared to other regional countries. Living standards and female literacy are high in Sri Lankans when compared to India, Bangladesh and Pakistan. This reflects from the current study results also. Female role in the family also different when compared to those countries. Life goals and expectations of the Sri Lankan females may be high due to above mentioned factors, so inability to achieve the expected goals may be a reason for high prevalence of depression.

The present study results are based on the self-reported version of EPDS scale. It is only a screening tool for depression, not a definitive diagnostic measure of antenatal depression. Definitive diagnosis of depression required clinical assessment by professional using ICD 10 diagnostic criteria.

Conclusions and Recommendations:
The present study concluded that about one fifth of antenatal mothers in the study group were having probable depression (22.8%), and the factors associated for the prevalence of depression were low level of education of the spouse, total family income of ≤5000 rupees, low social class, 4th or 5th pregnancy, unplanned pregnancy, pregnancy related complications, lack of social support, presence of physical abuse and having 2 or more life events.

Health care provider especially primary health care staff need to be sensitive to this issue as early identification and treatment of depression will improve the outcome. Awareness programmes on antenatal mental health problems and their associations should be carried out for PHMM as well as in antenatal classes. Mental health services should be made available at MOH level, as improving maternal mental health will invariably improve the family’s mental well-being.

References


THE BALANCE AND FUNCTIONAL IMPAIRMENT AMONG INDIVIDUALS WITH KNEE OSTEOARTHRITIS AT NATIONAL HOSPITAL, SRI LANKA

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Abstract

Background Knee osteoarthritis (OA) is one of most commonly encountered musculoskeletal disorders which may affect standing balance and leading to progressive loss of function.

Objectives The general aim was to identify the balance and functional impairment in knee OA. Additionally identify the relationship of function and BMI (Body Mass Index) with standing balance.

Methodology Comparative cross-sectional study conducted with 50 knee OA subjects and age, BMI, gender matched 50 controls. Standing balance, self-reported and performance-based function were assessed by Frailty and Injuries: Cooperative Studies of Intervention Techniques (FICSIT-4), Four Square Step Test (FSST), Generic Medical Outcome Study Short Form-36 item health status (SF-36) and Timed Up and Go (TUG) test. Data analyzed on SPSS 17.0

Results A Significant difference was identified in standing balance and functional level between groups (p=0.000). Significant correlation showed in static standing balance (r=-.566, p=.000) and dynamic standing balance (r=.786, p=0.000) with performance-based function. BMI showed significant relationship with static (r=-.385, p=.008) and dynamic standing balance (r = .392, p =.007) in knee OA.

Conclusion Balance and functional impairments are identified in knee OA. Decline in standing balance is associated with impairments in performance-based function. Increasing in BMI is related with decline in standing balance in knee OA.

Key words Osteoarthritis, balance, functional impairment

Introduction

Osteoarthritis (OA) is one of most commonly encountered musculoskeletal disorder worldwide. Worldwide estimates are that 9.6% of men and 18.0% of women aged over 60 years have osteoarthritis (Woolf & Pfleger, 2003). It is estimated that OA to be the fourth leading cause of disability in the world by 2020(WHO). It is associated with extensive direct and indirect costs and represents a considerable burden for an individual, as well as the overall health care system and the society. The rapid growths of elderly population will likely result in a significant increase in the medical costs of OA. Consequently, OA is becoming much more important from both medical and economic aspects (Rothfuss et al. 1997; Gabriel et al. 1997).

Osteoarthritis most often occurs in the knees, spine, hands, feet, and hips. The knee, one of the primary weight-bearing joints is commonly affected, involving 30–40% of the population by the age of 65years (Van Saale et al. 1989). Correspondingly knee OA is one of the most commonly encountered diseases of the musculoskeletal system (Hinman et al. 2002).

Especially in knee OA, balance impairment can be identified (Hinman et al. 2002). It is the single most important component dictating movement strategies. Balance is the result of a number of body systems working together. It requires processing of inputs from the eyes (visual system), the ears (vestibular system), perception of pressure and proprioception (somatosensory system) (Gribble & Hertel 2004). The musculoskeletal system and nervous system also play a major role in maintaining balance (Sears 2012).Age and Body Mass Index (BMI) may associate with balance and postural stability. Natural process of ageing is related with decline in the integrity of the physiological systems that control the balance (Hurley et al. 1998). Increase in BMI, is associated with poor postural stability (Greve et al.2007).
Balance impairments are related with an increased risk of falls and poor mobility in the elderly population (Shumway-Cook et al. 2000). In fact, one in three adults aged 65 and over will have a fall each year (Hausdorff 2001). Older people with lower limb arthritis are at increased risk of falling due to deficits in neuromuscular systems (Sturmiëks et al. 2004). When OA affects weight bearing joints, mainly knee, it leads to a marked decline of neuromuscular function and consequently to a reduction of balance and especially the ability to perform tasks. Therefore knee OA is considered to be an intrinsic risk factor for the occurrence of fall.

OA causes impairment and physical disability among the elderly men and women (McAlindon et al. 1993; Guccione et al. 1994). Along with the impairments, functional impairment appears to be prominent. 80% of those with osteoarthritis will have limitations in movement, and 25% cannot perform their major daily activities of life (WHO, 2003). Limitation of functional performance affects the general well-being of individuals and society. It is important to identify the factors which are influencing their functional performance in order to carry out a proper rehabilitation programme for knee OA subjects. Therefore the primary aim of this study was to identify the balance and functional impairment among individuals with knee OA. Additionally identify the relationship of function and BMI with standing balance.

**Methods**

Fifty diagnosed knee OA subjects (46 female, 4 male) and fifty controls (46 female, 4 male) aged between 40-70 were recruited from department of Rheumatology and rehabilitation. The control group was sign up from the subjects without knee OA. The subjects coincided with the study group in age, body mass index and gender. Basic characteristic of participants are presented in Table 1.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Study group(n= 50)</th>
<th>Control group(n= 50)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (SD)</td>
<td></td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>Age</td>
<td>57.14 years (SD±7.194)</td>
<td>55.96 years (SD±6.652)</td>
</tr>
<tr>
<td>BMI</td>
<td>27.39kgm² (SD±4.77)</td>
<td>27.17 kgm² (SD±4.86)</td>
</tr>
</tbody>
</table>

All participants were excluded if they were diagnosed other existing medical condition such as severe cardiopulmonary disease, history of knee surgery or major knee trauma, neurological disorders, ear disorders, reported any lower limb pathology or lower limb joint disorder that may affect the study. Information related to knee OA subjects in the study are presented in table 2. The study was approved by ethics commies of faculty of medicine, university of Colombo and National Hospital Sri Lanka. All participants provided their written informed consent. As only 04 male osteoarthritis participants were found that matched with inclusion and exclusion criteria for the OA group, numbers were too small to permit statistical analysis further within study sample. Thus 46 OA subjects and 46 non OA subjects (the female participants) were selected for further analysis from here.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean (SD)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration of knee OA</td>
<td>42months (median)(SD; ±57.106months)</td>
<td>3-240 months</td>
</tr>
<tr>
<td>Level of knee pain</td>
<td>6.35(SD±2.71)</td>
<td>2-12</td>
</tr>
</tbody>
</table>

In knee OA group there were 13 subjects (28.3%) with unilateral knee OA and 33 subjects (71.3%) with bilateral knee OA.

1. **Static balance**

Static balance was evaluated by using FICSIT-4 (Frailty and Injuries: Cooperative Studies of Intervention Techniques). Participants were asked to carry out the test in parallel, semi-tandem; tandem stances with eyes open and closed while one legged stance was performed with eyes open. Total FICSIT-4 Static Balance score was given out of 28. Demonstration and proper explanation was given to the patient prior starting the test.

2. **Dynamic balance**

Dynamic balance was evaluated by using FSST (Four Square Step Test). The subjects are required to step as fast as possible into squares that formed by four canes resting on the floor. They were instructed to step clockwise and anti-clockwise without touching the sticks.
3. Functional impairment

Functional impairment was evaluated as Performance based (objective assessment) and self reported (subjective assessment) for comprehensive understanding of functional limitation.

Performance based functional assessment (objective assessment) was assessed by using TUG (timed up & go test). TUG test is a widely used and a validated test for general physical performance in the elderly. Participants are required to stand up from an arm chair (approximate seat height of 46 cm, arm height 65 cm), walk a distance of 3 meters (118 inches, approximately 10 feet), turn around, walk back to the chair, and sit down. The time taken to complete this procedure was obtained as the test result.

Self reported functional assessment (subjective assessment) was evaluated by Generic Medical Outcome Study Short Form-36 item health status questionnaire (SF-36). The SF-36 consists of thirty-six questions and measures 8 parameters of health, physical and social functioning, role limitations because of emotional problems or physical problems, mental health, bodily pain, vitality, and general health perceptions.

4. Knee pain

The pain subscale of Western Ontario and MacMaster Universities Osteoarthritis Index (WOMAC-) was used to evaluate the knee pain in the OA group.

Data analysis

The data was analyzed using computer software, Statistical Package for Social Sciences Statistics version 17.0 (SPSS Statistics 17.0). Descriptive statistics (frequency and crosstabs), independent sample T test and Pearson correlation (bivariate) test were used. Statistically significance was set at p<0.05.

Results

Static and dynamic standing balance

The comparison of standing balance between study group and control group are presented in table 3. According to the statistical analysis there was a significant difference of static and dynamic balance between OA and non OA subjects (p=0.000). The mean difference percentage for static standing balance in study population was 19.03% and for dynamic standing balance was 27.42%.

<table>
<thead>
<tr>
<th></th>
<th>Study group</th>
<th>Mean</th>
<th>SD</th>
<th>Control group</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static balance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study group</td>
<td>46</td>
<td>22.04</td>
<td>3.87</td>
<td>46</td>
<td>27.22</td>
<td>1.209</td>
</tr>
<tr>
<td>Control group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dynamic balance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study group</td>
<td>46</td>
<td>14.22 s</td>
<td>2.80</td>
<td>46</td>
<td>10.32 s</td>
<td>1.80</td>
</tr>
<tr>
<td>Control group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Self reported and performance based function

The comparison of function between OA group and non OA group is shown in table 4. The mean values of sf-36 parameters in knee OA was lower than the non OA group. According to the statistical analysis there was significant difference of physical function, role of limitation due to physical health, bodily pain, general health, vitality, social functioning, and role of limitation due to emotional problems, and mental health between knee OA and non OA. (p=0.000). The statistical analysis has showed there was a significant difference performance based function between OA and non OA subjects. (p=0.000)
<table>
<thead>
<tr>
<th>Function (scores of SF-36)</th>
<th>Group</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>D</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-reported functionality</td>
<td>OA</td>
<td>56.96</td>
<td>14.47</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non OA</td>
<td>89.46</td>
<td>8.70</td>
<td></td>
<td>9</td>
<td>.0</td>
</tr>
<tr>
<td>Physical function</td>
<td>OA</td>
<td>30.98</td>
<td>37.70</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non OA</td>
<td>89.67</td>
<td>28.66</td>
<td></td>
<td>9</td>
<td>.0</td>
</tr>
<tr>
<td>Role of limitation due to physical problems</td>
<td>OA</td>
<td>53.50</td>
<td>15.64</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non OA</td>
<td>77.43</td>
<td>14.52</td>
<td></td>
<td>9</td>
<td>.0</td>
</tr>
<tr>
<td>Bodily pain</td>
<td>OA</td>
<td>46.72</td>
<td>12.36</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non OA</td>
<td>72.93</td>
<td>8.89</td>
<td></td>
<td>9</td>
<td>.0</td>
</tr>
<tr>
<td>General health</td>
<td>OA</td>
<td>56.2</td>
<td>17.64</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non OA</td>
<td>74.35</td>
<td>15.86</td>
<td></td>
<td>9</td>
<td>.0</td>
</tr>
<tr>
<td>Vitality</td>
<td>OA</td>
<td>66.03</td>
<td>14.35</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non OA</td>
<td>96.74</td>
<td>9.29</td>
<td></td>
<td>9</td>
<td>.0</td>
</tr>
<tr>
<td>Social functioning</td>
<td>OA</td>
<td>71.02</td>
<td>40.74</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non OA</td>
<td>97.83</td>
<td>14.74</td>
<td></td>
<td>9</td>
<td>.0</td>
</tr>
<tr>
<td>Role of limitation due to emotional problems</td>
<td>OA</td>
<td>66.09</td>
<td>14.69</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non OA</td>
<td>81.74</td>
<td>10.55</td>
<td></td>
<td>9</td>
<td>.0</td>
</tr>
<tr>
<td>Mental health</td>
<td>OA</td>
<td>55.98</td>
<td>12.79</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non OA</td>
<td>85.13</td>
<td>8.02</td>
<td></td>
<td>9</td>
<td>.0</td>
</tr>
</tbody>
</table>
Functionality and static and dynamic standing balance

The correlation between function and standing balance is presented in table 5. Self reported functionality (subjective assessment) that assessed with 8 parameters of sf-36 was not significantly associated with static balance or dynamic in knee OA. (p> 0.05). But performance based functionality (objective assessment) was found to be significantly related with static standing balance (r= -0.566, p= 0.000) and dynamic standing balance (r= 0.786, p= 0.000). It was moderate correlation between performance based functionality and static standing balance (r= -0.566) and high correlation between performance based functionality and dynamic standing balance(r=0.786).

<table>
<thead>
<tr>
<th>Function</th>
<th>Static balance (FICSIT-4)</th>
<th>Dynamic balance (FSST)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pearson(n)</td>
<td>Significance(p)</td>
</tr>
<tr>
<td>Self-reported functionality(Total scores sf-36)</td>
<td>-0.74</td>
<td>.627</td>
</tr>
<tr>
<td>Performance based functionality(scores TUG)</td>
<td>-.566</td>
<td>.000</td>
</tr>
<tr>
<td>BMI</td>
<td>Study group</td>
<td>-.385</td>
</tr>
<tr>
<td></td>
<td>Control group</td>
<td>.014</td>
</tr>
</tbody>
</table>

BMI and static and dynamic standing balance

The correlation between function and standing balance is presented in table 5. BMI in knee OA was significantly correlated with static standing balance (r= -.385, p=.008) and dynamic standing balance (r=.392. p=.007) in knee OA. It was moderate correlation BMI and static and dynamic standing balance. But static and dynamic standing balance was not significantly associated with BMI in control group (p > 0.05).

Discussion

This study showed significant difference of static and dynamic standing balance between OA and non OA subjects (p=0.000). This result was similar with other studies confirming that knee OA subjects have poor static and dynamic standing balance comparing to age, BMI matched control subjects (Hassan et al. 2001; Wegener et al. 1997; Hurley et al. 1997; Shaheen & Ayad, 2008; Hinman et al. 2002; Mohammadi et al. 2008).

Many of those assessed postural sway or postural stability which was used as an indicator of static standing balance more commonly. Therefore they have estimated the displacement of the patient’s centre of gravity from the vertical which can detect minimal adjustments. But for that they have utilized platforms and computer software (Hassan et al. 2001; Wegener et al. 1997; Hurley et al. 1997; Shaheen & Ayad, 2008) and sway meter (Hinman et al. 2002) to measure static standing balance. These measuring apparatus are expensive and difficult to use in the real clinical setting. Up to our knowledge there was no study up to date which was assessed static standing balance of knee OA subjects using simple inexpensive, quick clinical test. This study reflect that though it is difficult to predict the direction of deficit in postural away, knee OA subjects shows poor static standing balance impairment with age, gender, BMI matched controls using simple clinical test as FICSIT-4.

This study has showed that subjects with knee OA have poor dynamic standing balance compared to age, gender, and BMI matched non OA subjects using FSST which assess the dynamic balance in multidirectional way. This current study shows that individuals with knee OA mostly have impaired dynamic standing balance compared to static standing balance.

Functional outcome measures are generally in two types which are, self-report measures and performance measures. The isolated use of self-reported assessment or performance based assessment alone may inadequate
to represent the functional status related with health concepts (Stratford et al. 2003; Stratford & Kennedy, 2006). Therefore in the current study functional impairments were assessed using both self-reported /subjective assessment and performance based/objective assessment for comprehensive understanding.

The current study shows significant impairment in both self-reported function and performance based function in knee OA than age, gender, BMI matched controls confirming other studies (Ling et al. 2003; Hsieh et al. 2012; Shaheen & Ayad, 2008; Hurley et al. 1997). The knee OA group has demonstrated significant impairments in physical function, role of limitation due to physical health, bodily pain, general health, vitality, social functioning, and role of limitation due to emotional problems, and mental health in present study. Knee OA group has more impairment in physical function and role of limitation due to physical problems when comparing to other subscale in SF-36 with controls. This result verifies the findings of other studies (Ettinger et al. 1994; Toneli et al. 2011) that knee OA has greater impact on physical function of individuals.

According to results there is significance correlation between performance based function and static and dynamic standing balance in knee OA but not with self-reported function and standing balance. It verifies the suggestion of Harrison et al. (2004). In their study, they have indicated that the balance was a variable in the final model for performance based function, but not for self-reported functional difficulty.

The present study has reported that there is no significant correlation between self-report function and static and dynamic standing balance (p>0.05). This finding agrees with the findings of Shaheen & Ayad (2008) and Adegoke et al. (2012). But in contrast with the current study, they have reported that balance was not significant correlated with performance based function. According to results of Marsh et al. (2003) the balance was correlated with performance based tasks (transfer and ambulatory) and self-reported disability. The difference between this study findings and Marsh et al (2003) can be this study was included small sample size and younger participants. But Shaheen et al. (2008) and Adegoke et al. (2012) also have included small sample size and younger participants.

The reason for the difference in the relationship between balance and self-reported function and performance based function is not clear. When assessing self-reported function by a questionnaire it indicates the individual’s perspective of his/her own level and what the patient is reporting may not be highly associated with what they can do. The reason for the difference might be this.

The present study showed significant correlation between BMI with static and dynamic standing balance in knee OA. This results support the findings of Mohammadi et al. (2008) and Jadelis et al. (2001). It indicated that increasing BMI was associated with decreasing standing dynamic balance. But there was no significant correlation between BMI and balance in non OA in current study. It may be due to mean value of BMI (27.17 kgm$^{-2}$) not large enough to affect the balance in non OA subjects. Greve et al. (2007) also indicated that only individuals with BMI greater than 30 kgm$^{-2}$ were able to maintain shorter times in balance and longer times were unbalanced as compared with non-obese individuals. This finding may reflect that balance impairment with increasing BMI is risen when having knee OA.

**Conclusion**

Balance and functional impairments were identified in knee OA than age, BMI and gender matched controls. Individuals with knee OA mostly had impaired dynamic standing balance compared to static standing balance. Decline in static and dynamic standing balance was associated with impairments in performance based function in knee OA. In addition, increasing in BMI was related with decline in static and standing balance in knee OA.

**Recommendations and Limitations**

Based on above conclusions, it is important to identify the balance and functional impairments in knee OA. These findings suggest that strategies designed address the balance impairments have to be more concerned. It is better to further evaluate self-reported and performance based function in knee OA with regarding balance. In practice it is apparent that assessing the both perceived and performance measures when evaluating outcomes in knee OA would be important.

As only four males with knee OA were found there were exclude from analysis to prevent the gender bias and results were gained within females subjects only. So statistical comparisons between male and female subjects were could not make.
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Assessing Gender Sensitivity of Human Resource Policies and Rules for Public Sector Nurse-Midwives in Bangladesh – ATooland Initial Results

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Abstract:

IN BANGLADESH, PUBLIC SERVICE RULES ARE THE SAME FOR MALES AND FEMALES, BUT DO NOT FULLY ADHERE TO GENDER EQUALITY REQUIREMENTS TO ENSURE EQUITABLE WORKING CONDITIONS FOR NURSE-MIDWIVES. THE GENDER EQUALITY AUDIT TOOL (GEAT) DEVELOPED BY THE MINISTRY OF HEALTH AND FAMILY WELFARE, WITH ASSISTANCE FROM THE HUMAN RESOURCE FOR HEALTH PROJECT IN BANGLADESH, EFFECTIVELY MEASURES GENDER SENSITIVITY OF CURRENT, NATIONAL LEVEL HUMAN RESOURCE POLICY DOCUMENTATION FOR NURSE-MIDWIVES. THE "GEAT" ASSESSES PRESENCE OF KEY GENDER EQUALITY PROVISIONS AS APPLICABLE TO A PARTICULAR HUMAN RESOURCE POLICY DOCUMENT AND BROADLY ESTIMATES GENDER SENSITIVITY IN THREE SCORING LEVELS: “LOW” (1 – 40%); “MODERATE” (41 – 70%) AND “HIGH” (71 – 100%). IN 2013, 11 PUBLIC SECTOR HUMAN RESOURCE POLICY DOCUMENTS FOR NURSE-MIDWIVES WERE AUDITED FOR GENDER EQUALITY. AMONG WHICH GENDER SENSITIVITY WAS FOUND TO BE HIGH IN ONE, MODERATE IN NINE AND LOW IN ONE DOCUMENT(S), RESPECTIVELY. THE “GEAT” HAS BEEN FOUND TO BE EFFECTIVE IN IDENTIFYING AREAS FOR GENDER EQUALITY IMPROVEMENT IN CURRENT NATIONAL LEVEL HUMAN RESOURCE POLICY DOCUMENTATION RELEVANT TO NURSE-MIDWIVES IN BANGLADESH. THIS PAPER PRESENTS THE PROCESS OF “GEAT” DEVELOPMENT IN 2012, ITS APPLICATION IN 2013 AND INITIAL HUMAN RESOURCE DOCUMENTS REVIEW RESULTS IN 2014.

Keywords: nurse-midwives, gender equality audit, human resource policy, documentation, Bangladesh

1. Introduction

Bangladesh, with a current population of 155 million [Bangladesh Bureau of Statistics 2014] has been facing an acute shortage of trained Nurse-midwives to meet essential health service delivery requirements, especially in rural areas. At present, there are an estimated 0.2 nurses per 1,000 population, one of the lowest levels within SE Asia, the region with the lowest health worker to population ratio worldwide [Buchan et al. 2007; World Health Organization 2006, 2012].

Nurse-midwives in Bangladesh are “doubly marginalized”¹ due to gender discrimination against women in general and low social value attached to the Nurse-midwifery profession. While Bangladesh’s public service rules apply equally on paper to male and female workforce members, they do not fully meet global commitments to promote gender equality stipulated in international human rights instruments and standards. Lack of clear job descriptions as well as a well-defined career track often demotivates Nurse-midwives. As a result, nurse-midwifery education, recruitment and retention have been adversely affected leading to large shortages of trained Nurse-midwives nationally; further contributing to severe human resources for health crisis in Bangladesh [Ahmed at el 2011].

¹Focus group discussions (FGDs) and key informant interview (KIIs) with personnel of Bangladesh Directorate of Nursing Services (DNS) and Bangladesh Nursing Council (BNC), April 2012.
The MOHFW has acknowledged that Nurse-midwife deployment, promotion and working conditions need to be improved from a gender equality perspective. Measures have been included to address these deficiencies in selected operational plans of the current 2011-16 Health, Population and Nutrition Sector Development Program (HPNSDP) in Bangladesh. Priorities within the 2011-16 HPNSDP to improve the status and working conditions of Nurse-midwives include development and implementation of a comprehensive human resources plan which will address post creation and equitable distribution of nursing posts. In addition, improved human resource management policies on Nurse-midwife recruitment, deployment, transfer and promotion will be developed. The Foreign Affairs, Trade and Development Canada (DFATD) funded 2012-17 Human Resources for Health (HRH) Project in Bangladesh, is aimed at supporting these MOHFW strategies to improve the quality of nursing education and services.

The HRH Project is providing technical assistance to the Human Resources Management Unit (HRMU) and the Directorate of Nursing Services (DNS) of the MOHFW to improve human resource management and associated conditions for public sector Nurse-midwives. As part of the HRH Project’s technical assistance in 2013, the MOHFW developed a “Gender Equality Audit Tool (GEAT)” to review current human resource policy documentation related to Nurse-midwife recruitment, deployment and working conditions and, develop new, gender-sensitive human resource policy where required. This paper presents the process of GEAT development in 2012, its application by Bangladesh’s MOHFW in 2013 and human resource documents review results relevant to Nurse-midwives in 2014.

Martineau and Martinez [Martineau et al. 1997] were among the first to refer to “equitable gender distribution” within planning for the supply of health sector personnel, one of four key elements that human resources for health policies should address. Standing [Standing 1997] introduced a “gender inequality approach” which could be used to analyze “changing human resource policies on staffing levels and mix for those segments of the health care systems traditionally staffed by women”. An argument for factoring gender into human resources policy and planning was developed further by Standing [Standing 2000] along with a proposed framework for incorporating gender into human resource policy planning as part of health sector reform. Theobald [Theobald at al. 2005] identified gender concerns in health sector policy and planning documentation as such, along with specific challenges.

Published literature on practical tools to assess gender responsiveness of organizations or development projects as a whole is limited. Those which do may refer to document review as a necessary but not sufficient condition for a successful participatory gender audit. Practical applications of gender audits of human resource policy documentation in the health sector arose first with an International Labour Organization publication [ILO 2007] for “participatory gender audits”. This manual included a “gender audit desk review” or review of relevant documentation as part of a larger “social audit” or review of an entire health organization’s staffing structure, teamwork and key activities.

Among the few publications on participatory gender audit tools applicable to health sector human resources policy documentation, the toolkit developed by Limbu [Limbu et al. 2008] was found to be most relevant to the Bangladesh context. Limbu [Ibid.] refer explicitly to gender audit of “project design documents” as something which provides an “important description of the extent to which gender concerns are addressed in the project design” even though this will not elucidate gender concerns relating to “project activities during implementation” or “how men and women are affected by project impacts”. The Limbu [Ibid.] tool uses gender sensitive indicators and a scorecard to assess project documents, implementation, and impact. MOHFW’s GEAT was adapted from this tool.

2. Methodology

As shown in Fig. 1 below, the GEAT was developed in stages including literature review, preparation of a draft framework and tool, pre-testing and validation of the tool by a designated MOHFW task team. Tool pre-testing was undertaken through its application to two recruitment rules for Nurse-midwives and further improved. Eleven priority human resource documents relevant to nursing were selected by the MOHFW and audited in consultation with the Directorate of Nursing Services. Review findings were shared with the MOHFW task team during a one-day workshop held in September 2013.

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2 Nursing Education and Services Operational Plan (NES OP), and Human Resources Management Operational Plan (HRM OP), HPNSDP, July 2011-June 2016, Ministry of Health and Family Welfare, 2011.
The GEAT framework is composed of different sections that aids in systematic analysis of a document’s gender sensitiveness both in qualitative and quantitative aspects. It measures the presence and absence of key gender elements as applicable to a particular human resource policy or procedure document.

A key element of the GEAT, which is applied in Figure 1, Step 4, is application of the Gender Element Audit Table below. The table contains key gender elements against which a document’s gender sensitivity is assessed. The presence or absence of these gender elements as applicable to a document helps in indicatively measuring how well the document has scored in terms of gender sensitivity.

**Table 1: Gender Element Audit Table**

<table>
<thead>
<tr>
<th>i. Use of Gender relevant Terms:</th>
<th>ii. Use of Gender Grammar (Personal Pronouns)</th>
<th>iii. Gender Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>- “Male”, “Female”, “Gender”, “Equality”, “Equity”, “Human rights”, “women’s rights”</td>
<td>- Address both male and female (e.g., “he/she”, “his/her”)</td>
<td>- Quota in admission and recruitment - Maternity leave</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>iv. Gender Equality</th>
<th>v. Empowerment</th>
<th>vi. Gender-disaggregated Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal opportunity for male and female in the nursing sector - Administrative positions in public health offices, facilities and Nursing Institutes</td>
<td>Administrative positions that reflect authority - Decision/policymaking - Resource access &amp; control</td>
<td>- Sex-disaggregated data in HR information systems database</td>
</tr>
</tbody>
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<tbody>
<tr>
<td>- Nurse-midwife participation in national/international committees/fora</td>
<td>- Provisions which address GBV against Nurse-midwives</td>
<td>- Protection of Nurse-midwives’ rights</td>
</tr>
</tbody>
</table>

The GEAT also makes provision for overall narrative gender analysis, which may go beyond the specifics of the Gender Element Audit Table above. In addition, a section of the GEAT includes the “GE Assessment Scorecard” which measures the indicative gender sensitiveness of the HR document’s content in percentage terms. The calculation is simply the total number of “Yes” answers divided by total number of “Yes” + “No” answers, expressed as a percentage.

Document-specific gender sensitivity review scores are then derived using these categories of assessment: “Highly Gender Sensitive” (70-100%); “Moderately Gender Sensitive” (40-70%) and “Weakly Gender Sensitive” (1-40%).

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**Figure 1: GEAT development steps**
3. Results:

The 2012/13 GEAT application has been effective in broadly measuring the gender sensitivity of the following eleven human resource policy documents in Bangladesh related to Nurse-midwives. This has helped to identify specific areas where current human resource policy documentation relevant to Nurse-midwives can be further strengthened by the MOHFW:

b) 1 code of conduct entitled BNC Act and Rules on Code of Ethics and Conduct;
c) 4 Nurse Recruitment Rules (RR 1977, 1997, 1984, 1985);
d) 2 sets [2008 and 2012] of selected Job Descriptions (JDs) of the Directorate of Nursing Services;
e) 1 set of linked human resource administrative documents (including Government Notices/Orders & Public Service Rules)

Figure 2 summarizes the comparative levels of gender sensitivity as determined through GEAT application for the initial 11 human resource documents listed above. The document “Health Workforce Strategy 2012-2032” scored the highest (73%), while the “Human Resource Strategy 2003” scored the lowest (15%). The remaining 9 documents scored moderately for gender sensitivity within a range 44-67%.

![Figure 2: Gender Equality Score of 11 HR documents in 2014](image)

4. Discussion

The GEAT is a recently adapted tool to assess the gender sensitivity of essential human resource documentation relevant to public sector Nurse-midwives in Bangladesh. The ILO [ILO 2007] participatory gender audit process is a broader gender audit application to entire organizations or projects but also includes a documentary analysis. Similarly, Limbu [Limbu et al. 2008] refer to a gender audit process of entire development projects that includes gender audit of project documentation as well. The GEAT, however, is specifically designed to assess the gender sensitivity of national level human resource policy documentation for Nurse-midwives, a critical part of Bangladesh’s health sector workforce.
5. Conclusion

Gender sensitive human resource policies and procedures is one prerequisite for greater gender equality within any public sector health workforce. Bangladesh’s MOHFW has developed a relatively new tool, the Gender Equality Audit Tool (GEAT), to review the gender sensitivity of essential human resource policy and related documents for public sector Nurse-midwives. The GEAT has been effective in broadly identifying areas for improvement of strengthened gender equality elements within current, national level human resource policy and procedure documentation. Other countries may use or adapt this tool further to suit their national contexts and associated efforts to further strengthen enrollment, recruitment, deployment and overall working conditions of this important health sector cadre.

References

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Developing an Appropriate Virtual Service Provider Office Management Model for Service Plan in the Second Regional Health Service of Ministry of Public Health in Thailand

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Abstract

The purpose of this study was to develop an appropriate Virtual Service Provider Office Management Model (VSPOMM) for Service Plan (SP). The study was conducted in four stages, as follows: (1) study and review of virtual regional office models from related documents and literatures; (2) analysis and synthesis of data gathered from the first stage and then creation of the components of a model; (3) justification of the components of the proposed model by experts and Regional Operating Officers (ROO); (4) evaluation by executives. The following are the major findings and recommendations of the study: (1) providing administration and management for everyone, regardless of time and place, as new media and technologies fit in any way; (2) establishing administration by collaboration and clearing house; (3) supporting technical services both in the system and outside the system in academic administration; (4) instituting stakeholder support system in the network of general administration; (5) freedom in budget administration, especially in the information technology development; personnel administration with new management and information technology skills; operating support resources management, including management cockpit, document and URL web link, and using web technology applications. It could be concluded that VSPOMM was developed with considerable applicability to other Service Provider Offices.

Keywords: Virtual Office, Service Provider Office, Office Management, Service Plan

1. Introduction

The Ministry of Health has the main responsibility of promoting public health by providing a comprehensive health care system and health promotion, prevention, and treatment. It is also responsible for the rehabilitation of the health care system into several levels such as primary care, secondary care, and tertiary care to being excellent centers with the aim of serving each level in a different role and establishing the referral system to be able to access quality health care. The Ministry of Health also needs to make sure that the limited available resources are used efficiently and potential health care problems within the public health system in the region are anticipated and addressed. As a result, a policy in developing all levels of the health care systems is established. A health service system development plan is created to develop a network service under the principle of "seamless services network" link service to meet the health needs of the country. The current health system of Thailand is faced with several important issues that include performance and quality of services; fair access to health services; overcrowding of patients in the high-level services. Other possible issues include inappropriate use of resources; inconsistent roles in the services; expanded competition; allocation of limited available resources without proper planning; and organizing services with injustice in the development and accessibility of public services.

In 2013, efforts to reform the health system started with the aim of optimizing the management of the health system of the country, improving the management style in the area providing health services in the 12 regions, and promoting solidarity in the management and services of the health services network (the Second Regional Health Service is one of the country's 12 service network zones, which is responsible for Tak Province, Phitsanulok Province, Sukhothai Province, Uttaradit Province, and Phetchabun Province). "Regional Service Provider" is a key management mechanism created to realize the health service system development plans and also a mechanism established to bring about integration of all elements of the health system, which provides the advantage of resource sharing of services within the region to reduce the use of resources and budget, resulting in cost-effectiveness and efficiency. This mechanism also creates a scenario where making decision is quick because decision-making is done by the regional management and does not have to undergo centralization.

In 2014, development of an operational infrastructure was initiated with the goal of establishing a Service Provider Board to respond to the needs of the public health system. The Ministry of Health has set the
framework for the development of health care providers to have a clear and systematic health service system development plan aimed at improving the service levels from primary through secondary to tertiary and establishing excellent centers to be linked together into a network by geographical conditions and health care needs and communications. This provides the opportunity to use and share the available limited resources among all sectors and to efficiently support complex medical and public health problems. In addition, the Regional Service Provider has a dimension of decentralization to deal with health problems in the area, including a mechanism for pastoral systems, and at the same time, the Regional Service Provider only has the inspector general of public health, supervisors, and the Service Provider Board performing administration. However, a Service Provider Office to support the work of the executive has not yet been formally established, and there are no operations practitioners deployed yet, which are necessary to have in the Provincial Health Office and related agencies in each province. This is similar to having a virtual enterprise, but no clear model operates in a virtual organization and there is no clear format appropriate to the context. As a virtual organization, it is a new form of organization challenged to bring the application, but not the definition that is generally accepted by the virtual organization was seen 15–20 years ago, when working at home was made possible by the use of technology [M.H. Olson 1983 ; A. Venkatesh and N. Vitalari 1992]. Since then, terms such as virtual office, virtual classroom, and virtual corporation have appeared in the literature (e.g. [V.E. Giuliano 1982; S.R. Hiltz 1986; M. Malone and W. Davidow 1992]).

Researchers are interested in adopting a new organizational model to solve the above-mentioned problems. They put into consideration the concept of virtual reality created by a computer to establish an organization, so it may be of no physical shape, which is a characteristic that is different from traditional organizations in general. However, the definition of virtual organizations in this research refers to the network of organizations linked by information technology in order to share operational skills and resources [Travica. 1997] through the use of telecommunications, technology, social, and community networks, which are interdependent cooperation, flexibility, trust, and self-organization [Faucheux 1997]. The scope of the organization has an unclear boundary and location, which is expected to be useful in the adoption of VSPOMM for SP and in performing effectively. The purpose of this study was to develop an appropriate VSPOMM for SP in the SRHS of Ministry of Public Health in Thailand.

2. Methods

2.1 DATA SOURCES: experts, executives, and practitioners in the Vice Chief of the Provincial Health Office or ROO by passing training program. Groups studied in this research were selected by purposive sampling. They are those who have a deep understanding about the executive office of health services or those who are used to performing tasks related to health services, including in field offices.

Population: experts, executives on various aspects, and practitioners in the Vice Chief of the Provincial Health Office in the Second Regional Health Service (Phitsanulok, Tak, Uttaradit, Sukhothai, and Phetchabun).

Sample: experts (20), executives (20), and practitioners in the Vice Chief of the Provincial Health Office (regional operating officer) in the five provinces, five for each province (25) (Phitsanulok, Tak, Uttaradit, Sukhothai, and Phetchabun).

2.2 RESEARCH PROCESS: The purpose of this study was to develop an appropriate VSPOMM for SP in the SRHS, Ministry of Public Health, in Thailand by using mixed methods of research and development. The study was conducted in four stages, as follows:

Step 1: studying information about VSPOMM for SP by investigating various data sources, including text books, research databases, and the Internet, both domestic and foreign.

Step 2: analyzing and making synthesis of composition and structure of the VSPOMM for SP from the data from step 1 to create a management model. The elements considered are as follows: (1) philosophy, vision, principles, mission statement, policies, goals, and objectives; (2) administration established for the VSPOMM for SP; (3) academic administration; (4) general administration; (5) administrative budget; (6) administrative personnel; and (7) resources to support the work of health services.

Step 3: creating an appropriate VSPOMM for SP using the Empowerment Evaluation Technique from the gathered opinions of the various practitioners in the Vice Chief of the Provincial Health Office in 5 provinces (25 people) who attended the training courses of the field practitioners of the province and using the Delphi Technique, which includes three rounds of data gathering of the opinions of 20 experts. In the 1st round of data collection using questionnaire scales with five levels, the experts were asked about their opinions on the management model for virtual offices and health services. The mean, median, and interquartile range (IR) of the responses were computed and presented for data analysis. The experts compared their answers with the answers of the group in the 2nd round and 3rd round for review and comment.

Step 4: to determine the optimal management model for VSPOMM for SP in the SRHS by ensuring appropriate implementation and using the Delphi Technique by data collection of 20 executives using
questionnaire scales with five levels, the executives were asked about their opinions on the management model for virtual offices and health services.

2.3 STATISTICAL ANALYSIS: Data were analyzed using SPSS for Windows, and several statistics were derived, including percentage, mean, median and interquartile range, and the index of congruence (IOC).

3. Results

Results of the data analysis and the opinions of the experts and practitioners in the Vice Chief of the Provincial Health Office in the SRHS about VSPOMM for SP in the SRHS, Ministry of Public Health, in Thailand are summarized as follows:

Results on the appropriate management model for VSPOMM for SP in the SRHS, Ministry of Public Health, in Thailand, are presented in the following order: (1) philosophy, vision, principles, mission statement, policies, goals, and objectives; (2) administration established for the VSPOMM for SP; (3) academic administration; (4) general administration; (5) administrative budget; (6) administrative personnel; and (7) resources needed to support the work of the health services:

1. The philosophy, vision, principles, mission statement, policies, goals, and objectives of the VSPOMM for SP in the SRHS. The experts agreed with the points on philosophy, vision, principles, mission statement at the highest, and high level is very similar.

2. Establishing VSPOMM for SP in the SRHS. Regarding the elements of the VSPOMM, the experts agreed on most issues in the context of the VSPOMM for SP, including: (1) philosophy, (2) vision, (3) resolution, (4) policy, (5) target, (6) objective, and (7) yield. They also agreed on the issues concerning the operation (Process) of the VSPOMM for SP – the organization consists of general administration, coordination, information systems management, preparation of action plan, performance reporting, and evaluation of performance – except on issues concerning imported inputs (Input) of the VSPOMM for SP consisting of office personnel, supplies, information technology equipment, budget, and resources and issues with the product (output) of the VSPOMM for SP such as system stability, efficiency and quality of health promotion, prevention, and treatment, including whether rehabilitation can generate revenue for the country both directly and indirectly, coordinated and integrated to academic and research performance. The experts agreed on a massive scale.

Most experts agreed on the point of establishing a VSPOMM for SP by cooperation through the use of health care resources together (Collaboration), and they agreed on a lot of issues on collaborating in sharing information on various Provincial Public Health Office to manage themselves on their own (Clearing house) as an extension of the Common Service Provider Office for SP, which is being managed by the service provider board and provincial public health office. Experts disagreed on issues to establish a new especial VSPOMM for SP developed by entrepreneurs.

3. Aspects of academic administration. Experts agreed on most issues except on creating programs that support the specific needs of the service provider office; presentation of and training on the annual symposium to develop a practical application of regional operating officer to achieve a quality culture; on content development being divided into local, national, and international; and on forms of learning through the use of listening systems and video-on-demand system through the web pages of the regional operating officer, which other can see any time. Experts agreed on learning styles through discussion and debate using ask-answer electronic systems.

4. The general administration. Experts agreed on many issues except on issues regarding VSPOMM for SP focusing on revenue generation, grouping those comments electronically to provide feedback on projects of the VSPOMM for SP, procurement to develop a complete program for the VSPOMM for SP, decentralization of academic management through mutual cooperation in the network, providing power to the Board to establish research and business together, and supporting and encouraging the regional operating officer to pursue management roles and positions at a higher level.

5. VSPOMM for SP’s budget administration. Experts agreed on many issues (5 items) except on funding to invest in office facilities and on coordinating and consulting closely with the executive on budget and academic aspects. Experts were in disagreement on the issue of whether or not the VSPOMM for SP is focused on generating revenue.

6. Personnel administration. Most experts gave comments on most levels except on issues regarding the status of the regional operating officer being mainly a provincial operating officer and aiding the program regional operating officer. Dwelling on their own stories, experts agreed on many levels.

7. On the facilities of the VSPOMM for SP, which provided the executive, service provider board, regional operating officer, network parties, and stakeholders the opportunity to utilize live chat room, social work discussion group, virtual clubs, web board, folder sharing, e-mail, instant messaging, and video-on-demand.
Figure 1. Structure and Model of the Virtual Service Provider Office Management for Service Plan in The Second Regional Health Service of Ministry of Public Health in Thailand

Figure 1 shows the structure and model of the Virtual Service Provider Office Management for Service Plan in The Second Regional Health Service of Ministry of Public Health in Thailand, which was developed to support communication interfaces. The Chief Operational Officer (COO) serves as the leader and supervises the work to meet the goals and indicators of the Ministry of Public Health, and as the secretary to the board of directors, he also serves the following roles: 1) acts in partnership with the team to gather information to be used by the President and the Board of Directors in strategic planning and decision-making; 2) changes the policy of the Permanent Secretary and Chairman or Chief Executive Officer (CEO) to becoming operational plans; and 3) acts as the Chief of the service provider office in operational planning areas. In coordination with the Chief Information Officer (CIO), the COO creates policy objectives and standards on information technology for management and services. In cooperation with the Chief Human Resource Officer (CHRO), the COO supervises the creation of personnel recruitment policy and determining of the compensation guidelines. He also decides on appointment schedules and on appropriate and fair movements of personnel in accordance with the plan. In conjunction with the Chief Service Officer (CSO), he leads in the analysis of health issues and health care policy in the development of transit potential. In conjunction with the Chief Financial Officer (CFO), he decides on financial policy and takes lead on planning appropriate health investments and making sure there are no redundant joint risk management financial services units and the company does not suffer from the financial crisis. In conjunction with the Chief Nursing Officer (CNO) for administration. Communication among Chiefs can be facilitated by online management cockpit, document and URL web link, and web technology applications such as electronic meeting room, phone, Internet, intranet, and portal for Chiefs. Apart from phone, many of the common information and communication technologies such as Internet, intranet, video conferencing, and portal already exist among the Chiefs of the virtual organization. Some other technologies such as electronic meeting room and video conferencing may not be available to some of the Chiefs. Thus, it may be necessary to negotiate cost and other managerial and technical issues that are relevant on the use of those technologies. In the Phitsanulok Provincial Health Office, which was the executive agent into the COO in the structure of service provider office, contact center was the most widely used as in the case of the Chiefs, which was through channel coordination: e-mail, telephone, Facebook, and line. In each province, the responsibilities will be divided, which include coordinating, planning, data management, reporting, and evaluating. The emphasis is on the Service Plan (10 branches) that mainly aims to reduce death rate, unemployment rate, and waiting time and make sure that costs and services follow the standards.

4. Discussion and Recommendations
1. Establishing VSPOMM for SP must include philosophy, mission, vision, principles, goals, and policy objectives following the guidelines put in place by the service provider office for itself, which were made consistent with the policies of the Ministry of Public Health to be managed by the regional operating officer and where meeting the senior executive on modern technology of the network parties and stakeholders is central. In addition, establishing VSPOMM for SP depends on the availability of the regional operating officer in each provincial public health office because the VSPOMM for SP must be operated in a manner focused on equality, regardless of time and place, comprehensive administration, technical services are provided by executives, network associates and stakeholders all benefit, and utilization of all forms of media and technology appropriate to a realistic and effective use.

2. Based on the findings of this study, establishing VSPOMM for SP must follow a systematic approach under the SIPOC Model, which includes the Supplier, Input, Process, Output, and a feedback system (Customer) both in the establishment and administration of the VSPOMM for SP. Moreover, administrative system for academic and services in VSPOMM for SP must be developed with quality and standards. VSPOMM for SP must be operated in a collaborative manner to share resources (Collaboration), and in some categories using resources and personnel together in each of the Provincial Public Health Office as well as sharing information regarding various Provincial Public Health Office to manage themselves on their own (Clearing house) and having an agreement on the online implementation of management in the VSPOMM for SP.

3. In terms of academic administration, access to information in digital and online forms to support the executives, regional operating officer, network parties, and stakeholders, whether electronic databases and digital coordination center, must be made available in a variety of media through online lists. In addition, academic administration has to support technical services both in the system and outside the system by emphasizing that the regional operating officer, network parties, and stakeholders are central in meeting the requirements. As part of content development, the VSPOMM for SP needs to develop content in local, national, and international levels and share resources as much as possible.

4. In budget administration of VSPOMM for SP, freedom in managing the budget for the executive and academic agencies to promote the concept of creativity and entrepreneurship, sources of budgets are the national budget, funds, and others, but investment in the VSPOMM for SP is necessary. However, this requires very high investment statements.

5. Aspects of personnel administration, Significant related individuals consisting of executives, regional operating officer, network parties, and stakeholders for implementation in the VSPOMM for SP must be associated with sophisticated modern technology for opportunity to utilize live chat room, social work discussion group, virtual clubs, web board, folder sharing, e-mail, instant messaging, and video-on-demand, thus, preparation of personnel is very important. It is necessary to provide training for both contents in academic and research to improve the management of VSPOMM for SP and in managing the facilities of the VSPOMM for SP. It must also be prepared to look like a common service provider office as much as possible in administrative, academic, and services fields such as in electronic mail, live chat room, and providing a virtual group as required by the executives, regional operating officer, network parties, and stakeholders. In addition, the presentation of the information required (Delivery) must be in mixed media, whether video system based on online or satellite systems as appropriate in the region or area and to suit the investment and as required by the chief executive of the service provider office. The VSPOMM for SP must have the vision of the administration, foresee the changes in the procedures of the service provider office, take advantage of the innovation in the management, technical, and new services, and anticipate the impact that may occur. Senior executives must play a key role in driving the organization to see the benefit and use the technology in building an effective management system and valuable brain resources for the maximum benefit of the organization.

STUDY LIMITATIONS
The study was still unable to determine the suitability of the model because the process of modeling was based only on the opinions of experts and practitioners in the Vice Chief Provincial Public Health Office. In addition, data gathered were only in the SRHS, and the dimension of the model was specifically designed as therapeutic. Health promotion, prevention, and rehabilitation were not included. Reflecting on a holistic health management means that the integrity of creation (wholeness) is unique and unity cannot be divided in subsections – physical, emotional, mental, and spiritual – which are present in the society (Environmental). Model assessment for both formative and summative was also not performed, which was necessary before they can be considered as a practice or a policy.
5. Conclusion

Rapid advancement, availability, and affordability of technologies have changed the way service provider office management is reformed. Rapid development of service plan and the disappearance of physical boundaries have enabled the emergence of virtual offices (VO) from a “futuristic” concept into reality. VOs consist of independent offices networked together to provide product and services to customer. VO provides opportunities for an office with limited resources. However, the implementation of a VO has a lot of challenges that must be overcome. In this paper, we have discussed issues related to the model and structure of a VO. Main focus of a VO should be on a fit model. In addition, a fit model should be established in consideration of the development priorities such as cost, quality, and time. Development priorities are important in designing the important processes in the VO. For example, if a VO chooses to focus on the development priority of flexibility, then the VO partners should design their processes to be cost-efficient while maintaining the expected quality.

Structural design issues for a VO include selecting the VO partners, understanding the communication requirements, mapping the information and communication technology, and simulating the processes. Simulation of the VO may resolve some technical and managerial issues before the actual operation and enable the office to achieve customer satisfaction from the very start.

6. Acknowledgement

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References

Resilience Promotion in Young Adolescents
In Municipal area

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Abstract

Background: The research results about “Resilience Promotion in School Children” reveal three significant processes of the resilience promotion, i.e. 1) the process of promotion and competency development for fostering and maintaining self-esteem and self-efficacy and promoting positive child behaviors; 2) the process of risk prevention by preventing children from facing problems; and 3) the process of problem-solving and healing management in children exposed to risk factors.

Aims: To provide a social service program under “One University One Province Project” by the School of Health Science, STOU, in cooperation with the Pak Kret City Municipality and Family Development Centers, focusing on fostering skills of parents and child caregivers in resilience promotion for young adolescents.


Results and Conclusions: The results show that the participants had a high level of satisfaction with the workshop as a whole. They found the contents of the workshop to be important and useful for rearing children. Being aware of this matter, the participants became inspired to care for their children and able to identify risk factors, and they mutually formulated means to manage their communities accordingly.

Keywords: resilience promotion, young adolescents, One University One Province

Introduction

Adolescence is an overlapping phase of childhood and adulthood with physical, emotional, and social development as well as values, interests and identity determination including the interest in the opposite sex and others. If adolescents can live through this period with uncomplicated problems, their development to become adults will move along quite well and they can deal with their adulthood smoothly. According to the theory of steps for socio-psychological development, the human development process will move from one step to another like going up the stairs, without jumping over any step. The initial development steps have a consequence on the next steps in a series. The person’s relationship with other people will encourage him/her to create behaviors and develop personality in various forms suitable for his/her age. If the person cannot smoothly resolve the crisis or problem, the development of his/her personality traits in a desirable manner will be affected. But if the person is unable to resolve the problem, there will be a negative effect on personality development during that age. For early adolescents, their development will involve identity and identity diffusion. The conflict is more critical than that during other stages of life as it is a transition between childhood and adulthood. During this period, adolescents will erase their childhood image and move towards adulthood, causing a conflict in their relationship with adults, peers, and friends of opposite sex with serious socio-emotional confusion and violence. For the people who have got a balance between finding and not understanding their selves, they will develop a sense of loyalty to ideology, life philosophy, people’s groups/clubs, religion, culture, etc. The feeling of loyalty will cause the children to be relieved of their self-confusion, helping them to lead smooth lives through the crisis (Erikson, 1902 quoted in Sriruan Kaeokangwan, 2006: 35). Similarly, according to the theory of age-specific development, individual development in all aspects is a continuous process with each step affecting one another. The full and complete development process results in the development of the next step. If the quality of the development is incomplete in one step, it will affect the development in each of the next phases of life. At each phase of life, there will be major step-by-step growth and development in accordance with the timing conditions. Any person who has developed “what has to be developed” as per appropriate timing, he/she will be happy and successful with his/her phase of life as the good quality of development in one phase will have an effect on the quality in the next phases continuously. And the meaning of quality covers both quantitative and qualitative aspects of development. The desirable aspects of development for adolescents under this theory are suitable conceptual and problem-solving skills, intimate relationship with peers, understanding and practice of ethical principles, having the aim of social behavior, acceptance of physical changes of the body, use of the body efficiently, preparation for the profession, and emotional independence from parents (Havighurst, 1979 quoted in Sriruan Gaogungvan, 2006: 44).

However, it has been found that children in this age group are experiencing difficulties especially in present-day’s modern livelihood. As a result, it takes a longer time for them to reach mental maturity compared
with those in the past. Thus, the children in this age group are in a "critical period" as they are exposed to both positive and negative environmental conditions, comparable with the "cradle-room-house-doorstep-neighborhood sequence" development as they live within the parental environment or care. When they grow up, their environments will be beyond the household’s boundaries; and in their teens, the environments will be even broader (Frumkin, et al., 2004: 192).

Resilience is one of a broad concept that generally refers to positive adaptation in any kind of dynamic system that comes under challenge or threat. There are three components of resilience (Masten & Wright, 2009: 215-216), i.e. risk factors, protective factors, and adaptive outcome, as detailed below.

1) Risk factors are any event, condition or experience that gives an opportunity to a problem to occur, remain prevalent or become more serious. Risk factors may appear as a single one or a group of conditions within or outside the child’s body, or a reaction between the child and the environment (Anthony, et al., 2009: 46).

2) Protective factors. There are two kinds of protective factors, namely “internal protective factors” which are personal potential or capacity and “external protective factors” which exist in the environment outside the individual’s body and help enhance the person’s potential or capacity. Protective factors help minimize the impact of risk factors, hinder the path of the cause and impact, or obstruct the negative impact of the risk factors, resulting in a good adaptation (Constantine & Benard, 2001: 32). Protective factors can exist at different levels such as the environmental level especially the care from adults resulting in a positive impact for the child; while at the individual level the factors involve the child-parent bond which can provide protection against a number of negative drives. Protective factors are specific to the risks and have a good process or mechanism for improving the individual’s capacity to successfully adapt or have a positive outcome, which is important for positive adaptation and for overcoming various obstacles (Anthony, et al., 2009: 49). During each stage of life, the individual will have different protective factors, chiefly for example, attachment relationship, social support, intelligence and problem-solving skills, self-regulation skills, mastery motivation, self-efficacy, and cultural traditions (Masten & Wright, 2009: 221).

3) Adaptive outcome. The outcomes and adaptation result from the interaction between risk factors and protective factors that are illustrated as the outcomes or development. The important issue in the resilience study is the good outcomes. Therefore, the indicators of adaptive outcomes are successful outcomes that may be an internal function, such as health status, mental health condition, proper growth and development, and self-esteem or an external function, such as good learning achievements, successful working career, happy social life, positive social attitudes, or a combination of both kinds of indicators, such as happiness and success.

The resilience can be promoted to be embedded in individuals. Resilience arises from many processes. Thus, we can promote resilience for children with long development process (Winfield, 1994), and have to cooperate with families, schools and other stakeholders in community (Grizzell, 2006).

A review of ways to encourage children’s resilience shows the patterns or process for resilience promotion or development which can be grouped into two aspects, i.e. increasing individual competency or ability and increasing the capacity and protective factors, as well as the results of the author’s previous studies on “The School Children Resilience in Urban Slum Area in Bangkok” (Ratioran, 2012) and “The Process of Resilience Promotion in School Children in an Urban Slum Area” (Ratioran, 2013) suggested that the promotion of resilience can be summarized in three major processes:

(1) The promotion and development of capacity. This is the basic and important process in all groups under study, which includes strengthening and supporting self-esteem, self-efficacy and positive talent/ability expression. This can be carried out in various ways such as practicing self-responsibility, encouraging volunteerism, promoting praying and meditation according to religious guidance, providing spaces for the children to carry out activities, supporting the children to develop their abilities in their interests, and providing opportunities for the children to demonstrate their ability to compete.

(2) The process of risk factor prevention (reducing risks) is the prevention or suppression for the children to avoid facing problems or reducing the risks. This process is usually the result of caring for the children by the caregivers or schools with respect to risk factors that could have happened to the children. This includes close rearing, attention or supervision by parents, caregivers, and teachers.

(3) Solving problems and remedies. It is the process that occurs in the children who are exposed to or faced with risk factors, which includes the problem management and reduction of negative reaction from risk exposure. The examples are accepting that the problem has occurred with children, allocating time for thorough child care, pursuing the activities that can draw children’s attention away from the problem being faced, providing warmth, performing joint activities, and sharing lessons learned or experiences among peers of the same or different age groups.

The results of resilience promotion in children from the author’s studies show that families and schools are important protective factors that strengthen the process of enhancing their self-confidence and positive skills. So, it is important to encourage family including parents or caregivers and
who are involved in parenting children with knowledge about young children resilience and guidance to promote young children resilience. The project could be beneficial for building a family’s protective barrier and creating a warm family; and the participants could create their plan with brainstorming to find risk factors and create resilience promotion for children in their community.

Aims:
The program aims to foster skills of parents and child caregivers in resilience promotion for young adolescents through a social service program of “One University One Province Project” undertaken by the School of Health Science, Sukhothai Thammathirat Open University, in cooperation with the PakKretCityMunicipality including Family Development Centers.

Methodology:
This project was a continuation of the author’s two research studies: “The School Children Resilience in Urban Slum Area in Bangkok” and “The Process of Resilience Promotion in School Children in an Urban Slum Area”. It applied the lessons learned and knowledge in improving the learning and skills to care for young adolescents to become resilient.

Two community settings within the Pak Kret City Municipal Area included two Family Development Centers: Bang Talad and Ban Mai Samanchan.

The participants in this project were young adolescents’ parents or caregivers. The program aimed to foster skills of parents and child caregivers in resilience promotion for young adolescents who were members of the Bang Talad and Ban Mai SamanchanFamilyDevelopmentCenters; 25 persons of each DevelopmentCenter joined the one-day training course.

The project team members included public health specialist, young children specialist, social development personnel of the municipality, and representatives from the family development centers. The team members made decisions using the knowledge gained from the two previous projects through games and group process. The key knowledge included resilience, the importance of resilience promotion in young children, the guidelines for resilience promotion, and the analysis of resilience promotion.

The activities that promote young children resilience for the participants include:

“Swasdee”(Say Hi)

Man cannot live alone but need to stay together and depend on support from others. Thus, a good relationship is initiated the greeting. Greeting (Say Hi) is the first statement for building good relationships with each other.

“Dreams of Parents”
Parents will be expected to provide the best care for their children. And their expectations include what that their children would be, what their capacity would be, how they would grow up, and how they would live. These are the aspirations of parents, while they do not want their children to meet with any obstacles.

“Finding Puzzle Eggs: What is Resilience?”
The term of resilience has been defined with several perspectives, some of which are similar but some are different, all dealing with potential, capacity, strength, factors or resources and positive adaptation, whereas “resilience” will have a specific feature, i.e. coping with suffering or risk factors. The game below explains the meaning of resilience.

“Balancing the Eggs: Resilience promotion for Young children.”

Resilience is something that occurs intricately and dynamically through internal and external development; so its enhancement requires a continuous process of nurture and support with thorough and integrated efforts of the children, parents, peers, school and community (Weigand, 2007: 1-6).

“Telling good stories about family examples”

Some case studies of young children resilience were reviewed to see examples about parenting as well as lessonon inspiring ways of life.

“Activities to share child caring experiences”

The knowledge, such as the definition, resilience traits, resilience, the components of resilience, and resilience promotion keep the participants motivated and realized to the care of their children. This game was conducted with brainstorming among participants to share their experiences related to risk factors and decision-making for child resilience promotion in their families and communities.

Towards the end of the workshop, an evaluation was conducted to determine participants’ satisfaction using a questionnaire containing 10 close-ended questions, each with a 5-point rating scale.

Results:
The workshop results showed that the participants had a high level of satisfaction with the workshop as a whole. Their highest levels of satisfaction were noted for the contents of the workshop, which are important and useful for child care.

Activities for knowledge sharing among child caregivers were important for young adolescent’s resilience in their communities through learning about the definition of resilience, its traits, components, and resilience promotion. The participants became aware of this matter and inspired to care for their children, being able to identify risk factors and jointly formulated means to manage their communities accordingly. This reflects the application process for young adolescent’s resilience promotion.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>The output of brainstorming for risk factors and guideline for resilience promotion</th>
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<tr>
<td><strong>Risk Factors</strong></td>
<td><strong>Resilience Promotion</strong></td>
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<td>Quarrels</td>
<td>Talking with family when having a problem</td>
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<tr>
<td>Drug abuse</td>
<td>Establishing a caring family</td>
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<tr>
<td>Theft</td>
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<td></td>
<td>Promoting morals and ethics</td>
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<td></td>
<td>Setting up a community library</td>
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<td>Promoting careers in the community</td>
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<td>Training young children to share time with others</td>
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Table 1 shows the examples derived from the game: “Balancing the Eggs: Resilience Promotion for Young children”. The risk factors in their community are quarrels, drug abuse, theft and family disputes. For resilience promotion in the community, the participants’ ways to promote their children’s resilience which can be grouped into three major processes according to the results of the major processes of promotion of resilience by Ratioran (2013): (1) the promotion and development of resilience capacity including establishing a caring family, providing public space for young children to play and exercise, using time to be helpful to others, promoting morals and ethics, setting up a community library, promoting careers in the community, and training young children to share time with others; (2) the process of risk factor prevention is community monitoring; and (3) the ways to solve problems and seek remedies are to talk with family when having a problem.

**Discussion:**

This program was provided as a social service program under “One University One Province Project” by the School of Health Science, Sukhothai Thammathirat Open University, in cooperation with the PakKret City Municipality including Family Development Centers. The 50 participants who were young adolescents’ parents or caregivers from the Family Development Centers understood the objective of the program to foster their skills to promote resilience for their young adolescents.

Resilience promotion calls for intervention that entails three major processes. The best approach includes involvement from families, religious and community groups, educational systems, and any other entities that may provide positive modeling for the child’s development experience (Grizzell, 2006). This program was developed by the project team and made decisions based on the knowledge gained from the author’s two previous studies, and was conducted using games and group process to make the participants become willing to participate and happy to open their mind. The key knowledge provided includes resilience, the importance of resilience promotion in young children, guidelines for resilience promotion, and analysis of resilience promotion through brainstorming.

The key points derived from participants’ brainstorming can be grouped into three major processes. The promotion and development of capacity include establishing a caring family, providing public space for young children to play and exercise, using time to be helpful to others, promoting morals and ethics, setting up a community library, promoting careers in the community, and training young children to share time with others. This is a positive self-feeling towards a sense of self that people could feel good about themselves if they had a positive experience during childhood. To be loved and creating resilience through self-esteem and self-efficacy is the training of children to have positive thinking, search for and understand their own selves, and develop their talents that would become a successful pride (Tantipiwattansakul, 2007: 3).

The process of risk factor prevention is community monitoring. The prevention of risk factors is the process of prevention or separation of children from risk factors. This can be done in the family, school, or community. Those close to the children must pay close attention to the problems or risk factors that the children face and sort out ways to deal with such risk factors. Healthy Cities for Children is a concept that integrates the development of children and youth under the framework of comprehensive child development in all aspects as
the fundamental right, family, learning, the use of social space that is conducive to improving children’s quality of lives, and having the measures leading to systematic changes in the development of children and youth among various agencies at the provincial level (Nakornthap, 2007).

The process of problem-solving and remedies is talking with family when having a problem. It is the process that occurs after the children have been exposed to the risk factors and the children can adapt themselves and pass through hardships. So, this is where the protective factors function to support, restore, and give remedies for the children to continue to overcome the problems.

**Conclusion:**

The results show that the participants had a high level of satisfaction in the workshop as a whole. They found the contents of the workshop to be important and useful for rearing children. The participants became aware of this matter and inspired to care for their children, being able to identify risk factors and jointly formulated the means to manage their communities accordingly. The output of participants’ brainstorming was sent to the community committee as inputs in developing a community development plan.

The author will continue to expand the Resilience Promotion approach in young adolescents in other municipal areas, and plans to do a follow-up study on resilience in young adolescents including the impact, protective factors and adaptive outcomes.

**Acknowledgements**

The author is grateful to all the cooperation and partnerships of the PakKretCityMunicipality and FamilyDevelopmentCenters. I would specifically like to thank the head of the “One University One Province Project” who kindly provided funding support for this study.

**Bibliography**


Targeting HSP90 to Combat Drug-Resistant Cancer

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Abstract
Cancer being the second leading cause of death worldwide is an important public health concern. Current treatments options for patients with cancer including chemotherapy, radiotherapy and other targeted immunotherapy commonly select for drug-resistant disease. In order to combat such resistance, molecules and pathways associated with resistance to prior therapy must be negated or therapeutically targeted. One means by which to coordinately impact a broad range of drug-resistance-associated gene products is by inhibiting the function of the highly-abundant molecular chaperone heat shock protein 90 (HSP90) which serves as a stabilizer of many such ‘client proteins’ in tumor cells. In this review, we will evaluate how HSP90 inhibitors (HSP90i) may be envisioned to sensitize drug-resistant cancer cells to therapeutic intervention, thereby improving clinical benefits to patients.

Keywords: Cancer. Resistant treatment, Heat shock protein90

Introduction.
Cancer is the second most common cause of death worldwide. From the latest 2012 statistics released by the International Agency for Research on Cancer (IARC), the global burden of cancer has increased to an estimate of 14 million new cases per year, with cancer deaths estimated at up to 13 million annually. Developing countries are affected disproportionately, with more than 60% of new cases and 70% of cancer related deaths occurring in Africa, Asia, Central and South America (Globocan 2012, IARC). This situation is made worse in developing nations due to poor early detection of disease and the lack of access to “standard of care” treatments including chemotherapy, radiotherapy, targeted immunotherapy and hormone therapy. Considering the heterogeneous nature of cancer cells in a given tumor lesion, it is not at all surprising that these cell populations rapidly develop compensatory resistance mechanism to fight against any given specific form of treatment. In order to combat such resistance, many studies have considered combining existing, conventional treatments with HSP90i, that de-stablize a broad range of client proteins that underlie the drug-resistant phenotype of cancer cells.

Heat shock protein 90 (HSP90). By definition, heat shock proteins (HSPs) are proteins whose expression becomes elevated when increasing temperatures (or alternate harsh environmental conditions) are applied as a stressor to cells. HSPs are molecular chaperones that are rapidly transcribed and translated into proteins in stressed cells. Like other chaperone proteins, HSPs help other proteins recover from mis-folding events that would normally functionally inactivate those proteins (Blagosklonny, 2002). HSPs are some of the most conserved and primitive proteins known, and they serve the essential (normal) function of ensuring the survival of cells during pathological (stressful) conditions, such as hyperthermia, oxidative stress and hypoxia (De Maio, 1999).

Heat shock protein 90 (HSP90) is a highly-abundant, stress-inducible, homo-dimeric, ATP-dependent molecular chaperone. HSP90 uses the energy obtained from ATP binding and hydrolysis, to undergo a conformational change that supplies sufficient energy to allow for the refolding of bound client protein, thereby maintaining cellular signal transduction, receptor maturation, protein trafficking and innate and adaptive immunity (Taipale et al., 2010). During stress and other extreme locoregional conditions intracellular levels of HSP90 increase, as an adaptive response that sustains cell survival. HSP90 accounts for about 1-2% of total protein under normal conditions but this level increases to 4-6% under stress conditions (Hickey et al., 1986). In normal cells, HSP90 exists as a free protein and its chaperone activity is modest. On the other hand, in cancer cells, HSP90 is frequently overexpressed and plays an important role in the maintenance of protein conformational integrity, stabilization of a number of oncogenic/survival proteins, providing a cyto-protective response to hypoxic and acidic microenvironments and preventing their proteasome-mediated degradation, thereby supporting tumor progression and metastasis (Whitesell & Lindquist, 2005).
HSP90 represents a key component of a super chaperone machine that also contains HSP70, HSP40, HIP and HOP, which as a unit, maintain the functional integrity a growing list of client proteins, including signaling protein kinases, transcription factors, DNA repair proteins and other cytosolic or nuclear proteins (Taipale et al., 2010). In particular, HSP90 client proteins appear to be involved with all the major hallmarks of cellular physiology associated with cancer survival, growth and dissemination (Barrott & Haystead, 2013; Hanahan & Weinberg, 2011).

**Targeting HSP90 in cancer therapy.** HSP90 has become an attractive target for cancer therapy. Since HSP90 is an ATP-dependent chaperone machine, drugs that interact with ATP-binding sites of kinases have been tested for their ability to inactivate HSP90’s chaperone activity. Geldanamycin, a natural product produced by *Streptomyces hygroscopicus* was originally thought to function solely as a kinase inhibitor, but was later found to serve as an HSP90i that provided clinical benefit (Trepel et al., 2010a). The client proteins that were degraded in response to HSP90i represent an extended range of oncogenic fusion proteins, mutated and activated serine/threonine protein kinases, tyrosine kinases, as well as transcription factors that exhibit oncogenic activity. At present, there are more than a dozen different HSP90i that have been evaluated in clinical trials (Sangster et al., 2004). NVP-AUY922 and STA9090 are two successful synthetic HSP90i that are currently being investigated in clinical trials across a range of human malignancies. They bind to the N-terminal domain of HSP90 to displace ATP and thus its block chaperone function with a high degree of specificity (Soga et al., 2013). These HSP90i shift HSP90 from a refolding chaperone complex to a form that instead promotes the degradation of client proteins. Indeed, mis-folded client proteins are quickly polyubiquitinated and subsequently degraded by the 26S proteasome in the cell cytoplasm in tumor cells treated with these HSP90i (Ha et al., 2011).

Most chemotherapeutic agents target a limited number of individual proteins or signaling mechanisms, which might lead to the compensatory induction of alternate pro-tumor biologic pathways. Use of HSP90i would theoretically lead to a coordinate disruption of multiple compensatory pathways that support cancer cell survival and metastasis (Koga et al., 2009). Additionally, since HSP90 is highly overexpressed in tumors, this makes HSP90i-based intervention somewhat more selective in its site of action (Kamal et al., 2003). As a consequence, the use of HSP90i has gained substantial inertia for consideration as a novel cancer therapeutic strategy to combat the disease resistance that is commonly developed in response to conventional cancer treatment modalities.

**Fighting drug-resistance with HSP90i.** To date, chemotherapy and radiotherapy remain the most commonly applied treatments for cancer, but these both evoke the development of a high frequency of treatment-resistant disease. In order to combat this resistance HSP90 inhibitors are being used in combination with standard of care regimens. The HSP90i's 17-AAG and Gelandamycin have been used in several studies to fight the resistance against commonly-used chemotherapy drugs such as cisplatin and paclitaxel. In almost all cases, the synergistic anti-cancer activity of the drugs has been observed (Vasilevskaya et al., 2004)(Vasilevskaya et al., 2003)(Solit et al., 2003)(Lu et al., 2012; Tatokoro et al., 2012). With radiotherapy, DNA-repair proteins (i.e. many of which represent HSP90 clients) are overexpressed, which may explain the enhanced benefit of combining HSP90i with radiotherapy, leading to increased tumor cell death *in vitro* and *in vivo* (Acquaviva et al., 2014; Che et al., 2013; Dote et al., 2006; Ha et al., 2011; Jewell et al., 2010; Ko et al., 2012; Schmidt-Ullrich et al., 2003; Stecklein et al., 2012).

Even the targeted cancer therapies develop disease-resistance. The anti-tumor activity of Vemurafenib - which inhibits mutant oncogenic BRAF- was improved when combined with HSP90i such as STA9090 and XL888 (Acquaviva et al., 2014; Paraizo et al., 2012)). Similar results have been observed for therapeutic combinations of HSP90i NVP-AUY922, IPI-504 and 17-AAG with anti-HER2 antibodies (trastuzumab) in the setting of human breast cancer (Modi et al., 2011; Scaltriti et al., 2011; Wainberg et al., 2013), and imatinib (a c-KIT inhibitor) in the setting of gastrointestinal stromal cancers (Bauer et al., 2006; Smyth et al., 2012). In addition, other ongoing studies are combining HSP90i to increase the sensitivity of breast cancer cells to hormone therapy.
Figure 1: Combating drug-resistant cancer with HSP90 inhibitors

Conclusion. Therapeutic targeting of HSP90 is predicted to block the pro-tumor impact of multiple oncogenic pathways associated with (drug-resistant) cancer progression and dissemination. Since HSP90i exhibit a degree of tumor selectivity (accumulation and retention) they should be applied at lower (than maximal tolerated) doses in combination protocols to limit off-target toxicities and to maximize on-target benefits to patients with cancer (Neckers & Workman, 2012; Trepel et al., 2010b). The studies discussed in this review suggest that HSP90i are promising agents for use in combating drug-resistant cancers, preferably in combination approaches.

Reference:


Developing Tobacco Smoking Cessation Program for Thai High School Students

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Abstract

This study aimed to develop the tobacco smoking cessation program for Thai high school students. Theories of Health Behavior Change, Protection Motivation and Reasoned Action were designed for the study. The program consisted of 10 interventions: 1) self-assessment; 2) smoking knowledge; 3) motivating; 4) promising; 5) nonsmoker party; 6) meditation; 7) online information; 8) buddy support; 9) practice; and 10) counseling. 60 participants were purposively recruited from Thai high school students who have smoking behavior. 30 participants were in experimental group participating in the program offered once a month for 6 months, while twenty participants in the control group did not participate in the program. Quantitative data assessing the participant’s urine cotinine level, knowledge and attitude to quit smoking scores were analyzed the difference between the experimental and control group using pre-post independent sample t test.

The results revealed that after 6-month program participation, participants in the experimental group reported significantly higher scores of knowledge and attitude to quit smoking and lower level of urine cotinine than those in the control group. The recommendation is that the tobacco smoking cessation programs as a form of mutual aid that could offer great benefits to control smoking in high school students.

Keywords: Smoking cessation, Student, Tobacco

1. Introduction

Thailand is one of Asian countries with the highest rate of cigarette smoking among teenagers [TCRKMC, 2014]. The children age between 13 to 17 years of age or grade 7 to 12 of school years are found to be a new smoker. Although smokers worldwide prompt to quit smoking, only 1% to 3% actually quit smoking [NCCDPHP, 2014]. Thus, effective programs to increase knowledge and attitude to quit smoking programs are needed. Due to explain the smoking behavior, 3 theories: Health Behavior Change: HBCT, Protection Motivation: PMT and Reasoned Action: RAT; are used. The HBCT addresses one’s readiness to act on a new healthier behavior through 5 stages of change: 1) pre-contemplation; 2) contemplation; 3) preparation; 4) action; and 5) maintenance [Prochaska&Velicer, 1997]. Pre-contemplation is the stage that one does not intend to change an unhealthy behavior in the next 6 months. Contemplation involves changing an unhealthy behavior in the next 6 months. Preparation occurs when a person change behavior within the next month. Action stage is when one has adjusted his/her behavior within the past 6 months. The maintenance involves preventing deterioration of change. The PMT offers a person’s protection as a result of 4 factors: 1) perceived a threatening event (such as lung cancer); 2) perceived the vulnerability (getting lung cancer caused by smoking); 3) efficacy of preventive behavior (perceived effectiveness of smoking cessation); and, 4) perceived self-efficacy (confidence to engage in smoking cessation) [Boer & Seydel, 1996]. The RAT proposes one’s behavior is determined by his/her intention to perform the behavior [Ajzen, 2002]. Although prior
smoking cessation programs available for a variety of age groups, none has confirmed to be effective [Wateesatogkit & Ritthipakdee, 2005]. Those programs suggested it is necessary to use the HBCT with teenage smokers [Wakefield, 2014]. Few prior programs used the HBCT, PMT and RAT as a framework for developing the programs. Therefore, the purposes of this study were to develop the tobacco smoking cessation program for Thai high school students and, evaluate the effectiveness of the program.

2. Method

2.1 Samples: Samples are 60 students, 13 to 18 years of age, who smoked studying in grades 7 to 12 of two public high schools at Nakhorn Nayok, Thailand. The criteria for recruiting was: 1) smoke less than 10 cigarettes daily; 2) desire to quit smoking within 6 months; 3) have a urine cotinine level that indicated tobacco use (≥ 200ng/ml); and, 4) be in the contemplation or preparation stages of change. 30 students of each school were random selected to be in either the experimental or the control group.

The experimental group was comprised of 25 (83.33%) males, 13 to 18 years of age (mean = 16.05 years). They all stated they had tried average 5 times to quit smoking. Although over half (n = 21; 70%) of their parents smoked, most (n = 17; 80.95%) of them never cautioned their children about the dangers of smoking. 27 (90%) members of the experimental group were in contemplation stage and 3 (10%) were in preparation stage.

The control group consisted of 27 males, 13 to 18 years of age (mean = 15.25 years). They had tried average 3 times to quit smoking. Even though most (n = 19; 63.33%) of their parents smoked, the majority (n = 18; 60%) of their parents never had advised them about of the risks of smoking. 24 members of the control group were in contemplation stage and 6 were in preparation stage.

2.2 Instruments: 4 instruments were used in the study.

1) The demographic data sheet (DDS): comprised information regarding each student’s: age; grade in school; religion; number of times attempts to stop smoking; cigarettes were smoked each day; whether either parent smoked and gave recommendation on the effects of smoking.

2) The urine cotinine test (UCT): cotinine is a chemical made by the body from nicotine, which is found in cigarette smoke [Alfa Scientific Designs, 2014]. If the UCT ≥200 mg/ml was indicated, it meant the student had been smoking.

3) The knowledge and attitude to quit smoking questionnaire (KAQ): consisted of 2 parts. Part I designed to obtain knowledge about diseases related to smoking; second-hand smoke; and assistance needed with smoking cessation. Part II sought attitude toward smoking. The KAQ was examined by 3 experts who specialized in smoking cessation and the reliability was found to be 0.78.

4) The parents’ questionnaire: comprised information about what parents had done to prevent their children from smoking.

2.3 Smoking Cessation Program: It consisted of 10 activities designed to enhance each subject’s knowledge and attitude toward cessation of smoking.

1) Self-assessment: it required each student to record his smoking behavior each day, during the third weeks of the program.
2) Smoking knowledge: Posters and videos were used to distribute information about the dangers of smoking during the 1\textsuperscript{st} and the 2\textsuperscript{nd} week.

3) Motivating: Self-help manuals were provided for students during the 3\textsuperscript{rd} and 4\textsuperscript{th} week. The manuals included information regarding: actions to stop smoking; practices to use in dealing with nicotine withdrawal; and, benefits of smoking cessation.

4) Promising: Each student made a personal written agreement during the 5\textsuperscript{th} week to stop smoking. Each student then showed the date he planned to quit smoking and his plan regarding how he would keep from smoking, to the researcher.

5) Nonsmoker party: The research team held 3-hour nonsmoker parties during the 6\textsuperscript{th} and 8\textsuperscript{th} week at the school. The focus of the parties was to demonstrate the how to refuse to smoke; methods to quit smoking; and, how to assist others to stop smoking. They also watched videos about students who successfully had quit smoking. Those who had not smoked for at least 7 days received rewards from the researcher.

6) Meditation: The students were taught a 30-minute meditation technique at the 9\textsuperscript{th} and 11\textsuperscript{th} week. The technique started with: (1) sitting on a chair in a comfortable position with eyes closed; then (2) slowly inhaling, while counting from 1 to 5, and slowly exhaling, while counting from 6 to 10. The steps were done 10 times.

7) Online information: Students were encouraged to obtain online information via email and Facebook about the dangers of smoking, as well as advice regarding how to quit smoking with their friends and the researcher.

8) Buddy support: Each student selected his own buddy to share his smoking cessation experiences and difficulties. The researcher made an appointment two times with the students and buddies regarding how the buddy support was working.

9) Practice: 30 minute group sessions were provided once a week during the 12\textsuperscript{th} and 24\textsuperscript{th} week. The sessions provided opportunities for students to share their smoking cessation successes with others.

10) Counseling: Providing advice and support concerning problems related to smoking cessation success or failure once a month throughout the program by the researcher.

2.4 Procedure: After the students were assigned to either the experimental or control group, the DDS and KAQ were administered to them. The experimental group then participated in the smoking cessation program for 6 months. After completion of the program, both groups were administered the UCT and the KAQ. Upon completion of the data gathering, the researchers offered to administer the smoking cessation program to students in the control group.

2.5 Ethical considerations: The Ethics Review Committee for Human Research Subjects, Srinakharinwirot University, approved the study prior to data gathering. The students and their parents were provided with information regarding: what would be involved to take part in the study; maintenance of confidentiality and anonymity; and, permission of a student to withdraw from the study at any time without effects.

2.6 Data Analysis: Descriptive statistics were used to analyze the DDS. An independent t-test was performed to compare the score means of KAQ and UCT between the two groups before and after the program.
3. Results

The smoking cessation program was found to have a significant influence on the experimental group’s knowledge and attitude toward smoking and urine cotinine levels (Tables 1).

Table 1 Comparison of the mean scores of knowledge, attitude and cotinine between the experimental and control groups before-after participation in the program.

<table>
<thead>
<tr>
<th>Description</th>
<th>Experimental group</th>
<th>Control group</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Before</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge</td>
<td>15.45</td>
<td>5.31</td>
<td>14.475</td>
<td>3.9915</td>
</tr>
<tr>
<td>Attitude</td>
<td>5.19</td>
<td>0.7215</td>
<td>4.884</td>
<td>0.495</td>
</tr>
<tr>
<td>Cotinine</td>
<td>219.798</td>
<td>4.168</td>
<td>218.90</td>
<td>2.10</td>
</tr>
<tr>
<td>After</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge</td>
<td>24.75</td>
<td>5.871</td>
<td>19.80</td>
<td>3.393</td>
</tr>
<tr>
<td>Attitude</td>
<td>6.048</td>
<td>0.3945</td>
<td>5.274</td>
<td>0.5625</td>
</tr>
<tr>
<td>Cotinine</td>
<td>105.262</td>
<td>5.681</td>
<td>191.97</td>
<td>3.179</td>
</tr>
</tbody>
</table>

* p <.05

4. Discussion

The findings suggest the smoking cessation program had a significant influence on the students involved in the program. Such findings are similar to a prior study that found counseling and providing information had a significant influence on one’s knowledge about smoking [Maansi et al. 2010]. The use of online information was found to be a positive experience for students attempting to stop smoking [Chen & Yeh, 2006]. Also similar to the findings of a prior study that found the negative effects of using cigarettes provided a positive attitude regarding smoking cessation [Ham & Lee, 2007]. Meditation techniques supported the study of Chen and colleagues (2008) that are effective in helping to control the need for nicotine [Chen et al, 2008].

5. Conclusions

This study’s findings demonstrated the effectiveness of using multiple activities when developing the smoking cessation program for students with the use of the HBCT, PMT and RAT to design the program. The results revealed that after 6-month program participation, participants in the experimental group reported significantly higher scores of knowledge and attitude to quit smoking and lower level of urine cotinine than those in the control group.

6. Limitations and Recommendations

This study had limitations when examining and applying the findings because the sample size was small. Further studies need to use a larger sample size studying in a variety of geographical areas. Also, because of the gender differences, it would be of interest to compare the effectiveness of this type of program between male and female students.
7. Acknowledgements

The researcher would like to thank the Tobacco Control Research and Knowledge Management Center for financially supporting this study.

References

Circumstances, Injuries and Outcome of fall among the Elderly Admitted to the Accident Service of National Hospital of Sri Lanka

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Anti-Malaria Campaign, Ministry of Health, Sri Lanka¹, National Hospital of Sri Lanka²

Abstract

Objectives
To assess circumstances, injuries and outcome of falls among the elderly admitted to the Accident Service of National Hospital (NHSL) of Sri Lanka

Methods
A descriptive cross sectional study was carried out among the elderly admitted to the Accident Service of NHSL during a period of 3 months. Patients above 60 years admitted with falls were enrolled into the study using the consecutive sampling technique. Information was collected from 438 patients using an interviewer administrated questionnaire and a record sheet.

Results
Mean age of study population was 72.84 ± 8.7 years with a range of 60-95 years. Most of the falls were occurred inside the house (n=266; 60.7%) and out of them, most occurred in living room (33.7%), bed room (28.6%) and bath room (18.3%). Fractures accounted for most of the injuries (n=294; 67.1%) followed by soft tissue injuries (n=165; 34.4%). Females had a higher proportion of fractures (n=236, 74.4%) compared to males (n=58; 47.9%) (p=0.000). The most common fractures reported were hip (n=136; 46.3%), forearm (n=51; 17.3%) and spinal fractures (n=28; 9.5%). The case fatality rate during the admission was 0.5%.

Conclusions
Falls among the elderly should be recognized as an important health issue.

Key words: Elderly, falls, injuries

Introduction
Population ageing is a global phenomenon and as a part of it Sri Lanka is ageing in an unprecedented rate. By 2030 Sri Lanka is expected to have 22% of its population over 60 [Siddhisena, 2004]. Falls are leading causes of morbidity and mortality among the elderly. Each year 28-35% of people over 65 and 32-42% of people over 70 years fall [WHO Global Report, 2007]. Incidence of falls in United Kingdom, China and Japan were 22.4%, 19.3% and 20% per year respectively [WHO Global Report, 2007; Chu, Chi and Chiu, 2005].

Many of the falls that occur in the elderly result in bruises, head trauma and fractures; mostly of the hips, spine, arms, ankles and legs [Tonarelli, 2010]. Falls are the most common cause of injuries and hospital admissions for trauma [Centers for Disease Control and Prevention, 2010; Nawaratne, 2004]. The management of consequences of
falls is costly to the health care system as well as to the patient and family. Further it reduces the quality of life of these senior citizens. Existing evidence indicate that falls are predictable and preventable [Gillespie, Robertson and Gillespie, 2012].

Information on falls is limited in Sri Lanka as well as other developing countries. A hospital based study of elderly in the district of Colombo reported that 23% of the people who are over 65years fell in a year [Weerasuriya and Jayasinghe, 2005]. Incidence rate of falls reported in a prospective community based study in Sri Lanka was 492 per 1000 person years [Ranaweera et al, 2013].

This study was conducted to assess circumstances, injuries and outcome of falls among the elderly admitted to the Accident Service of National Hospital (NHSL) of Sri Lanka.

**Methods:**

A descriptive cross sectional study was carried out among the elderly admitted to the Accident Service of NHSL from June 2013 to August 2013. Patients above 60 years admitted with falls were enrolled into the study using the consecutive sampling technique. According to the calculated sample size 438 were enrolled in to the study. Critically ill participants were excluded. This study was approved by the Ethical Review Committee, NHSL. Written informed consent was obtained.

A fall was defined as an event when a person comes to rest unintentionally on the ground or other lower level, without any extrinsic force (e.g. forcefully pushed down, knocked down by a car) [WHO Global Report, 2007; Chu, Chi and Chiu, 2005].

Baseline information and information on circumstances of falls were obtained by a pre tested interviewer administered questionnaire. Baseline information included history of falls within previous year and information on biological risk factors and medications. Information on circumstances of fall included place and time of fall; activity engaged in when falling; external environmental factors prevailing at the time of fall such as rain, poor lighting and intrinsic factors such as loss of consciousness, consumption of alcohol. A record sheet was used to extract information on injuries and outcome of falls from Bed Head Tickets (BHTs). Information on injuries included number, type and site of injuries. Injuries were classified as soft tissue injuries, fractures and damage to internal organs; all contusions, abrasions, lacerations and sprains were classified as soft tissue injuries. Questionnaires for this study were developed by investigators and the face, content and consensual validity were checked by a multi-disciplinary panel of experts consisting of specialists in surgery, medicine, community medicine and orthopaedics.

Data collection was done by four medical officers working in the NHSL by interviewing the patients at the wards and extracting some data from the BHT as described above. If an elderly was not in a position to be interviewed, information was obtained from a responsible relative. Patients were followed up until they were discharged, transferred to another hospital/ward or until their death.

Data was entered and analyzed using Statistical Package for Social Studies. Descriptive analysis of socio-demographic profile and other associated factors was done.
Results

Four eligible persons could not be enrolled due to refusal of consent (non-response rate - 0.9%). Mean age of study population was 72.84 ± 8.7 years with a range of 60-95 years. Majority was females (72.4%, n=317) and Sinhalese (78.3%, n=343). About half of the study population (51.5%, n= 226) had studied beyond year 5. Majority was not employed (86.8%, n=380) and 64.3% (n=277) reported that they have no income. While majority of the elderly lived with their family or relatives (88.4%, n=387), 7.3% (n=32) lived alone and 1.1% (n=5) lived in elderly homes.

Forty eight (11%) had another fall within the last year. Table I presents the circumstances of fall. Majority of falls (60.7%, n=266) occurred inside the house and out of them, majority (72%, n=72) occurred in living room. Most of the outside falls occurred in garden (40.3%, n=70), road (15.8%, n=27) and public places (13.5%, n=23). Slippery floors and objects causing trips were associated with 35.6% and 16.4% of falls respectively. About 10% (n=42) of falls were preceded by loss of consciousness (syncopal falls).

As presented in Table II, fractures accounted for most of the injuries (n=294; 61.4%) followed by soft tissue injuries (n=165; 34.4%). Females had a higher proportion of fractures (n=236, 74.4%) compared to males (n=58; 47.9%) (p=0.000). The most common fractures reported were hip (n=136; 46.3%), forearm (n=51; 17.3%) and spinal fractures (n=28; 9.5%). Duration of stay in accident service was less than one day, two to seven days and more than seven days in 44.6% (n=195), 36.5% (n=160) and 18.9% (n=83) respectively. The case fatality rate during the admission was 0.5%.

Table I: Distribution of circumstances of fall

<table>
<thead>
<tr>
<th>Circumstances of fall</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Place of fall</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outside the house</td>
<td>172</td>
<td>39.3</td>
</tr>
<tr>
<td>Inside the house</td>
<td>266</td>
<td>60.7</td>
</tr>
<tr>
<td>Total</td>
<td>438</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Exact place- inside falls</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bed room</td>
<td>75</td>
<td>28.6</td>
</tr>
<tr>
<td>Living room</td>
<td>88</td>
<td>33.7</td>
</tr>
<tr>
<td>Bathroom</td>
<td>46</td>
<td>18.3</td>
</tr>
<tr>
<td>Kitchen</td>
<td>32</td>
<td>12.1</td>
</tr>
<tr>
<td>Staircase</td>
<td>16</td>
<td>6.0</td>
</tr>
<tr>
<td>Others</td>
<td>9</td>
<td>0.3</td>
</tr>
<tr>
<td>Total</td>
<td>266</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Exact place – outside falls</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Garden</td>
<td>70</td>
<td>40.3</td>
</tr>
<tr>
<td>Road</td>
<td>27</td>
<td>15.8</td>
</tr>
<tr>
<td>-----------</td>
<td>-----</td>
<td>------</td>
</tr>
<tr>
<td>Public place</td>
<td>23</td>
<td>13.5</td>
</tr>
<tr>
<td>At or near well</td>
<td>13</td>
<td>7.7</td>
</tr>
<tr>
<td>Workplace</td>
<td>10</td>
<td>5.8</td>
</tr>
<tr>
<td>Others</td>
<td>29</td>
<td>16.9</td>
</tr>
<tr>
<td>Total</td>
<td>172</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time of fall</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Midnight to 3.59am</td>
<td>17</td>
<td>3.9</td>
</tr>
<tr>
<td>4.00am to 7.59am</td>
<td>73</td>
<td>16.7</td>
</tr>
<tr>
<td>8.00am to 11.59am</td>
<td>119</td>
<td>27.2</td>
</tr>
<tr>
<td>12 noon to 3.59pm</td>
<td>80</td>
<td>18.3</td>
</tr>
<tr>
<td>4.00pm to 7.59pm</td>
<td>98</td>
<td>22.4</td>
</tr>
<tr>
<td>8.00pm to 11.59pm</td>
<td>45</td>
<td>10.3</td>
</tr>
<tr>
<td>Total</td>
<td>432</td>
<td>98.6</td>
</tr>
</tbody>
</table>

*Missing value - 6*

<table>
<thead>
<tr>
<th>Level of fall</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat ground</td>
<td>358</td>
<td>81.6</td>
</tr>
<tr>
<td>From a higher place</td>
<td>73</td>
<td>16.7</td>
</tr>
<tr>
<td>To a lower place</td>
<td>6</td>
<td>1.4</td>
</tr>
<tr>
<td>Total</td>
<td>438</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Extrinsic factors prevailing at the time of fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor light</td>
</tr>
<tr>
<td>Uneven floor</td>
</tr>
<tr>
<td>Steps</td>
</tr>
<tr>
<td>Loose rugs/carpets</td>
</tr>
<tr>
<td>Slippery/wet floor</td>
</tr>
<tr>
<td>Objects causing trips</td>
</tr>
<tr>
<td>Others</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Extrinsic factors at the time of fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute illness</td>
</tr>
<tr>
<td>Dizziness</td>
</tr>
<tr>
<td>Loss of consciousness</td>
</tr>
<tr>
<td>Consumption of alcohol</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Able to get up without help</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>
**Table II: Distribution of injuries following falls**

<table>
<thead>
<tr>
<th>Injuries</th>
<th>Number</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of injuries</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One</td>
<td>397</td>
<td>90.6</td>
</tr>
<tr>
<td>More than one</td>
<td>41</td>
<td>9.4</td>
</tr>
<tr>
<td>Total</td>
<td>438</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Type of injuries</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soft tissue injuries</td>
<td>165</td>
<td>34.4</td>
</tr>
<tr>
<td>Fractures</td>
<td>294</td>
<td>61.4</td>
</tr>
<tr>
<td>Others</td>
<td>20</td>
<td>4.2</td>
</tr>
<tr>
<td>Total</td>
<td>479*</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Anatomical site of injuries</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head</td>
<td>112</td>
<td>23.4</td>
</tr>
<tr>
<td>Neck</td>
<td>8</td>
<td>1.6</td>
</tr>
<tr>
<td>Thorax</td>
<td>16</td>
<td>3.3</td>
</tr>
<tr>
<td>Abdomen, lower back and pelvis</td>
<td>46</td>
<td>9.6</td>
</tr>
<tr>
<td>Upper limbs</td>
<td>107</td>
<td>22.3</td>
</tr>
<tr>
<td>Lower limbs</td>
<td>190</td>
<td>39.8</td>
</tr>
<tr>
<td>Total</td>
<td>479*</td>
<td>100.0</td>
</tr>
</tbody>
</table>

*Total number of injuries reported was 479 since some people had more than one injury.
Discussion

Majority of falls (60.7%, n=266) occurred inside the house and out of them, majority (72%) occurred in living room followed by bedroom (28.6%) and bathroom/toilet (18.3%, n=46). Similarly a hospital based study on risk factors of hip fractures in Sri Lanka found that most of the falls had occurred indoors (73%) and within the house, common places of the falls were patient’s room and the toilet (Pannilahetti, 2003). However, it is interesting to note that in most community based studies, majority of falls occurred outside the house [Chu, Chi and Chiu, 2005; Ranaweera, 2012].

Majority of falls had occurred between the times of 8am to 4pm (43.9%, n=192). This may be due to increased activity of elderly during this time period. Several other studies have also reported results [Berg et al, 1997; Pannilahetti, 2003; Ranaweera, 2012]. Common extrinsic factors prevailing at the time of fall were slippery floor (35.6%), objects causing trips (16.4%), uneven floor (9.4%), steps (5.9%) and poor light (4.7%) with similar findings reported from other studies [Berg et al, 1997; Pannilahetti, 2003; Ranaweera, 2012]. Since information was obtained in relatively shorter period after the fall when compared with most other studies [Chu, Chi and Chiu, 2005; Ranaweera, 2012], effect of recall bias is minimal in this study.

Fractures accounted for most of the injuries (n=294; 61.4%) followed by soft tissue injuries (n=165; 34.4%). Information on injuries following falls in hospital based studies are limited and in community based studies more soft tissue injuries were reported compared to fractures [Chu, Chi and Chiu, 2005; Ranaweera, 2012]. This is expected since minor soft tissue injuries will not be admitted to a hospital whereas most of the fractures will be admitted. Hip fracture which causes serious disability to patient and immense cost to the health system [Pannilahetti, 2003] accounted for about half of the injuries. Even though only the stay in accident service was assessed in this study due to logistic reasons, about one fifth of the study population was staying in the accident service itself for more than seven days.

The high prevalence of serious injuries following falls reported in this study emphasize the importance of preventing falls and improving health facilities to manage consequences of falls. The factors identified in assessing circumstances of falls could be utilized in designing falls prevention programmes.

Acknowledgements

Research allowance was granted by Education, Training and Research unit of Ministry of Health.
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Meeting the Primary Health Care Needs of Rural Assam through Introduction of a Mid-Level Health Worker: Lessons from India’s Experience with Rural Health Practitioners

Suchitra Lisam\textsuperscript{1}, Dilip Singh Mairembam\textsuperscript{2}, Sundararaman T\textsuperscript{3}, Prankul Goel\textsuperscript{4}, Nishant Sharma\textsuperscript{5}, \textsuperscript{1,2,4,5} Human Resources for Health Division, National Health Systems Resource Center,\textsuperscript{2}National Health Systems Resource Center,NIHFW Campus, Baba Gangnath Marg, Munirka, New Delhi-110067;

ABSTRACT:
BACKGROUND: THE INTRODUCTION OF A THREE YEARS DIPLOMA IN MEDICINE AND RURAL HEALTH CARE (DMRHC) COURSE IN 2005 HAS LEAD TO AUGMENTATION OF HUMAN RESOURCES THROUGH DEPLOYMENT OF RURAL HEALTH PRACTITIONERS IN ASSAM, INDIA.
OBJECTIVES: THE STUDY AIMED TO ASSESS THE PERFORMANCE OF SUB-CENTERS (SCs) IN TERMS OF RANGES, UPTAKE AND QUALITY OF PRIMARY HEALTH CARE SERVICES IN SCs WITH AND WITHOUT RHPs.
METHODS: WE USED QUALITATIVE AND QUANTITATIVE TECHNIQUE. SCs WITH RHPs WERE SELECTED USING PURPOSEFUL SAMPLING METHOD. KEY INFORMANTS (KI) INTERVIEWS WERE HELD WITH RHPs, AUXILLAIRY NURSE MIDWIVES, BENEFICIARIES AND GOVERNMENT OFFICIALS TO GAIN PERSPECTIVES ABOUT RHP MODEL, SERVICE DELIVERY AND CHALLENGES.
RESULTS: PERFORMANCE OF SCs WITH RHPs HAS IMPROVED SUBSTANTIALY IN TERMS OF OUTPATIENT DEPARTMENT CASELOAD AND INSITUTIONAL DELIVERIES. KEY CHALLENGES INCLUDE LACK OF REFERRAL TRANSPORT, HOUSING AND PROMOTION AVENUES. RESPONDENT’S PERCEPTIONS ARE POSITIVE IN TERMS OF MANAING INCREASED NUMBER AND TYPES OF COMMON AILMENTS, DRUG AVAILABILITY, IMPROVED CARE, PROPER REFERRAL AND INITATION OF INSTITUTIONAL DELIVERY.
CONCLUSIONS: REPLICAITION OF RHP MODEL IS CRITICAL FOR IMPROVED RURAL HEALTH CARE SYSTEMS PROVIDED SUPERVISORY AND SUPPORT MECHANISMS ARE STREAMLINED. RECOGNITION OF DMRHC AND CREATION OF REGULAR CADRE IS NECESSARY FOR SUSTAINABILITY OF RURAL HEALTH SYSTEMS.
KEY WORDS: DIPLOMA IN MEDICINE AND RURAL HEALTH CARE, RURAL HEALTH PRACTITIONERS, ASSAM RURAL HEALTH ACT, HEALTH SUB-CENTERS

Introduction

Coverage of health care services is proportionate to the numerical adequacy of skilled health workers providers (doctors, nurses and midwives). As per international norms, 228 skilled health providers per 100,000 population is required to achieve a minimum 80% coverage of deliveries by skilled birth attendants or for measles immunization\cite{WHO Global Policy Recommendations 2010}. There is growing recognition that skilled mid level health care workers can play a major role in community mobilization and in delivering a range of health-care services \cite{Zohra S et al. 2013}. Education strategy was one of the measures for retaining them with an aim to admit only those students who are likely to serve in under-serviced areas and mould education to retain the commitment \cite{WHO Global Policy Recommendations 2010}. Indian states have also introduced these education strategies to address these huge crises of shortages of health workers, particularly in the rural and underserved areas by giving preferential selection of workers with rural backgrounds for medical/nursing education\cite{Chhattisgarh, one of the states having the lowest human resource densities in India, had introduced the three years course to train medical professionals for serving in rural areas and preliminary report on assessment of professional skills of Rural Medical Assistants (RMA) in comparison with other alternatives was positive \cite{T. Sundararaman et al 2011}. Based on the lessons learnt, Assam state having one of the highest maternal and infant mortality rates in India \cite{Regulation of Assam Rural Health...
Regulatory Act 2005] and dearth of skilled health workers, had introduced a similar three years course in 2010-11 with legal support for provision of health services at HSC. This study was conducted from February 2013 to June 2013 to assess the primary health services since deployment of RHPs at SCs, understand their perspectives regarding their course, their roles, ranges and types of services delivered since their joining at health centers.

Method
The study is a mix of quantitative and qualitative research technique. Purposive random sampling method is used for selection of 8 high focus districts (HFDs) out of 14 HFDs on the basis of criteria like availability of RHPs in HSCs in the district in the last 1 year period. From a total of 140 RHPs positioned at 94 HSCs visited in these districts, a sample size of 93 respondents was chosen, out of which 2 dropped out due to constraints. Altogether a total of 389 respondents were interviewed including 20 district and 4 state level officials. In addition to this, 20 group discussions with respective community served by sub centers, faculty and students from Jorhat Medical Institute were held. We reviewed the key maternal and child health performance parameters before and during the process of the phased deployment of RHPs at the sub – center.

Results
Roll Out of RHP Course:

The Assam Rural Health Regulatory Act was passed in 2004 to establish an authority for regulation and registration of Diploma Holders in Medicine and Rural Health Care (DMRHC) and their practice of medicine in rural areas. Jorhat Rural Medical Institute started the first batch of DMRHC in September 2005, and 98 students underwent the training. Candidates having rural background with 10+2 (Physics/Chemistry/Biology); 50% pass mark for general candidates and 45% for reserved category are eligible for application. Subjects taught in 1st year, 2nd year and 3rd years are pre-clinical, para-clinical and clinical respectively, after which they undergo internship of six months.

Deployment of RHPs:

After the first batch passed out in September 2008, the Government of Assam, in April 2010 deployed 86 RHPs in SCs of high focus districts (HFDs) to provide comprehensive health care services. As of March 2013; RHPs have been deployed in 370 out of 5610 SCs, across all 27 districts [State Programme Implementation Plan 2009-2013].

RHP recruitment and retention
Out of the respondents interviewed, 70% were males. 56% of them had pursued the RHP course as they wanted to serve the community. 99% respondents felt that the course was helpful in developing the requisite skills for the job, yet only 62% were satisfied with the course duration. 99% respondents get a monthly take home salary of more than INR 10000. Most respondents (95.60%) felt that there should be an avenues for promotion in this job.

Perspectives of RHP about the DMRHC Curriculum
Print media was the major source of information about the course. Interest for serving community and good job perspectives remained the main reason for pursing the course among RHPs. Many of them had an opinion that DMRHC was similar to MBBS course in terms of subjects and contents taught; notable differences was the lack of
Forensic Medicine, Major Surgery, Dermatology and Psychiatry and relatively shorter duration of course. However, majority of respondents considered that course was suitable and sufficient for serving in rural health settings

On asked about the course, a 27-year-old RHP responded:

“The course curriculum is similar to MBBS except major Surgery skill and Forensic Medicine. The 3-year course is compact and subjects taught are adequate, but the volume of the whole course is quite large. Internship duration of 6 months - 5 month at Jorhat Medical College and 1 month at State dispensary - may be increased”

Internship:

One RHP who joined the services in April, 2010 said:

“The internship period of 6 months was not sufficient to fully equip us to conduct our routine work at sub centers; it should be a minimum of 1 year period with more emphasis on medicine, obstetrics and surgery”

Services provided by the RHPs:

94.51% respondents said that they treat non – communicable, while only 39.56% treat communicable diseases including TB and Malaria. 96.7% respondents have treated emergency cases and 98.89% have conducted minor surgical interventions. 97.73% respondents conduct physical examinations of pregnant women, 82.76% conduct routine laboratory tests. 94.51% conduct deliveries at sub centre and 91.21% conduct post natal check-ups of the mother. 69.23% respondents said that they immunize the new born child while all RHPs said that they have family planning services at the sub centre.

Trainings Received by RHPs:

48.4% of RHPs had received in-service training while 72.5% of them felt the need for further trainings to update their current levels of knowledge and skills. One of the male RHP said “More training is required mainly for revision, getting up-to-date information and to enhance relevant knowledge”.

Challenges faced by RHPs:

Health facility infrastructure, location of the health facility and referral for transport mechanisms were noted as major challenges. Nearly 94.51% respondents felt that existing infrastructure was a challenge while 92.31% respondents felt the challenge was referral for transport.

Area of posting:

Most of the RHPs responded that current posting was located outside their home-district and no residential facility or quarter was provided. When asked for comments on their posting place, a 26 year old male RHP posted at one of sub-center in Hailakandi district said:

“The local people are illiterate and aggressive; this place is so far away from my home and home district. There is no residential facility at the sub center for me.”

Lack of residential quarters and infrastructure arrangements

93.4% stated that physical infrastructure including availability of residential quarters or arrangements for accommodation top the areas for improvements in health facilities.
An RHP said “There are no residential quarters and store room for medicines etc. There is lack of water supply and referral transport provisions. One MPW is posted here but no extra room and furniture to provide services. Proper labor room is also required for hygienic delivery”

Lack of career progression & knowledge up-gradation

Another RHP expressed that “Scope for knowledge utilization - there should be a provision for the RHPs to work at higher facilities; so that they get an opportunity to manage various other diseases, which would help them to remember what they had learned”.

Performance Analysis

We note that there has been a steady increase in deployment of RHPs since 2009. There has been a gradual increase in SC performance in all districts. (Table 1).

Table 1: Sub – Centre Performance

<table>
<thead>
<tr>
<th>Districts</th>
<th>SC Performance</th>
<th>No. of OPD cases reported</th>
<th>No. of deliveries at SC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nagaon</td>
<td>NA</td>
<td>13705</td>
<td>14096</td>
</tr>
<tr>
<td>Jorhat</td>
<td>NA</td>
<td>17770</td>
<td>17958</td>
</tr>
<tr>
<td>Hailakandi</td>
<td>18312</td>
<td>20000</td>
<td>19241</td>
</tr>
<tr>
<td>Goalpara</td>
<td>6630</td>
<td>9266</td>
<td>9777</td>
</tr>
<tr>
<td>Nalbari</td>
<td>17958</td>
<td>18312</td>
<td>20000</td>
</tr>
<tr>
<td>Cachar</td>
<td>37653</td>
<td>38556</td>
<td>114525</td>
</tr>
<tr>
<td>Darrang</td>
<td>19706</td>
<td>19757</td>
<td>128095</td>
</tr>
<tr>
<td>Karinganj</td>
<td>30803</td>
<td>31399</td>
<td>100941</td>
</tr>
</tbody>
</table>

Source: District wise report on SC performance; HRMIS,- Assam HMIS

During the period 2007-08 and 2012-13; the overall state performance related to maternal health services improved with indicators like ANC registrations of pregnant women increasing from 73.3% to 100%, institutional deliveries against estimated deliveries increasing from 35.30% to 67.20% and home deliveries also increasing from 7.50% to 13.90%. In the 8 HFDs, key indicators like ANC registration and mothers who had at least 3 ANC visits during the last pregnancy, nearly doubled. Children aged 12-23 months who are fully immunized against expected live births (%) increased from 50% in 2007 – 08 to 84% in 2012-13 (Table 2).

Table 2: Key health indicators of Assam during the year 2007 – 13

<table>
<thead>
<tr>
<th>Year</th>
<th>Before RHP induction</th>
<th>After RHP induction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2007-08 (DLHS-3)</td>
<td>2008-09 (CES)</td>
</tr>
<tr>
<td></td>
<td>2010-11 (HMIS)*</td>
<td>2011-12 (HMIS)*</td>
</tr>
<tr>
<td></td>
<td>2012-13 (HMIS)*</td>
<td></td>
</tr>
<tr>
<td>Mothers who received any ante-natal check (%)</td>
<td>74.8%</td>
<td>93%</td>
</tr>
<tr>
<td>Institutional Deliveries against Estimated Deliveries</td>
<td>35.30%</td>
<td>64.4%</td>
</tr>
</tbody>
</table>
Home Deliveries (SBA& Non SBA) against Estimated Deliveries
Children aged 12-23 months Fully Immunized against expected live births (%)

<table>
<thead>
<tr>
<th></th>
<th>Home Deliveries</th>
<th>Estimated Deliveries</th>
<th>Children aged 12-23 months</th>
<th>Fully Immunized</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(SBA&amp; Non SBA)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>against</td>
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<td></td>
<td>Estimated</td>
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<tr>
<td></td>
<td>Deliveries$</td>
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<td></td>
<td>63.6%</td>
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<tr>
<td></td>
<td>16%</td>
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<td>16%</td>
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<tr>
<td></td>
<td>14%</td>
<td></td>
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<td></td>
<td>50.9%</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>80%</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>82%</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>83%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: DLHS-3 [MoHFW DLHS 2007-08]; CES, North-East [MoHFW CES, Assam factsheet 2009]; HMIS [Assam HMIS] *(children 0-11 months fully immunized)

**Community’s perspectives:**

After posting of RHPs at SCs; provision of ANC and PNC services have become more systematic and are available daily. SCs have now the capacity to conduct institutional deliveries and besides common ailments. The medicines’ availability status has improved considerably. Infant and maternal related illnesses and deaths have decreased since the RHPs could identify danger signs for proper referral.

**Perspectives of Faculties/Students:**

Faculty and students commented that current Diploma course should be upgraded to a Bachelor degree course to facilitate interested students in their pursuit for a Master’s degree. Increasing the internship period from 6 months to 1 year was suggested. The lack of adequate faculty, especially the senior teacher positions, has hampered the teaching program. Creation of regular cadre will help chart out career progression would help in sustainability of the model.

**Perspectives of Government Officials:**

Overall it is a good model as people’s perceptions towards service delivery in SCs has changed dramatically. People’s perception about ranges and quality of services has changed after deployment of RHPs with SCs showing remarkable increase in OPD cases load and initiation of institutional deliveries. Many officials felt RHP model could be scaled up provided they receive adequate trainings and are well equipped to deliver quality health care services.

**Conclusion**

The RMAs introduced in Chhattisgarh and RHPs in Assam are classified as mid-level health workers under ‘non-physician clinician (NPC)’ who is not trained as physician but who is able to perform many diagnostic and clinical functions of a medical doctor and who has more clinical skills than a nurse [Zohra S et al 2013]. Our study shows that there has been remarkable increase in OPD services and delivery services, since the introduction of RHPs at SCs. RHPs have started providing a wide range of OPD services like symptomatic treatment of minor ailments, diagnosis, referral and treatment of communicable diseases, screening and treatment for non-communicable diseases, management of emergency cases, and minor surgical procedures. Challenges include revising the course content and duration of internship besides facing significant challenges of RHPs similar to previous study in South Africa that includes scaling up production, creating more funded public sector posts and absorbs new graduates [Jane D et al 2013]. Improvement in human resources through augmentation has led to improved health services delivery in Chhattisgarh if we are to reduce the maternal mortality rate in longer term [Anand S et al 2004]. Assessing the impact of the new cadre on quality of care will become a new priority and key areas of future research, given the general concerns about quality of management and supervisory system.

**References:**


Effect of Physical Activity during Pregnancy on Birth Outcomes in Mothers Presenting at the Antenatal Clinic of De Soysa Maternity Hospital, Colombo 08

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Abstract

Background & Objective: According to many national recommendations women should be physically active during pregnancy. The relation between physical activity during gestation and pregnancy outcomes in Sri Lankan women is poorly understood. The present study assessed whether, in a general obstetric population, prenatal physical activity affects birth outcomes. Methodology: A cohort of 78 pregnant mothers was done from mean gestational age of 217 days, until the time of delivery. 18 to 35 age, singleton, primigravid pregnancies, were randomly assigned from the prenatal outpatient care at De Soysa Maternity Hospital, Colombo 08. Physical activity level was determined using an interviewer administrated questionnaire. Gestational age, infant birth weight, labor pain, mode of delivery and duration of labor were adopted as outcome criteria. Chi Square Test was performed using Statistical Package for Social Sciences (SPSS) 17.0 version. Results: The occurrence of emergency cesarean delivery was significantly related to the prenatal physical activity level. (p =0.015). Mildly active women observed to have a greater risk. All other outcomes assessed were statistically unrelated to the level of physical activity in gestation. Conclusion: In the light of the obtained results, physical activity during pregnancy does not appear to significantly influence the birth outcomes, except in terms of mode of delivery.

Key words: Physical activity, Preterm births, Low birth weight

Introduction

During past decades effect of physical activity during pregnancy has been established as a research interest. This has created a move towards standardization of the prenatal activity level recommendations. [Smith & Campbell, 2003]. Accordingly, the most popular recommendation is, “In the absence of either medical or obstetric complications, 30 minutes or more of moderate exercise a day, on most, if not all days of the week is recommended for pregnant women.” [Guidelines of American College of Obstetricians and Gynecologists for exercise during pregnancy and postpartum period, 2003] In spite of the recommendations, the prevalence of physical activity across gestation yet seems to be quite low among the obstetric population worldwide [Smith & Campbell.2003; Lewis et al, 2008]. In Sri Lanka, misbeliefs and fears based on cultural and social norms are the major reasons for this low prevalence. Given the large diversity of physical activity, most frequently researchers have made attempts to only one or two domains of physical activity. In earlier research, effect of occupational exposures have been the main focus. A great deal of studies has found unfavorable outcomes[Palmer et al.2012; Peoples-Sheps et al.1991 ;Ahlborg, Bodin & Hogstedt,1990]. On the contrary, effect of leisure time physical activity appear to have a substantial positive effect on birth outcomes[Juhl et al.2008;Heqaard et al.2010; Mudd et al. 2013]. With the tendency towards aerobic exercise, research examining the effects of structured exercise programmes during pregnancy appears to be on rise [Haakstad and Bo,2011; Clapp et al 2000]. Either occupational or recreational, the general evidence base is not consistent. In addition a considerable number of research has studied the effect of prenatal physical activity as a whole [Both et al.2010; Domingues et al.2008; Misra et al.1998]. Since the confictions of results interfered with the balance of evidence, the impact of prenatal physical activity on birth outcome is still on debate.

Materials and Methods

A cohort study was done with a sample of 78 pregnant mothers. Study subjects were recruited from the population of women attending prenatal outpatient care at De Soysa Maternity Hospital, Colombo 08, between March and June2013. Pregnant mothers of between 18 to 35 of age, first parity, singleton gestation with completed 30 weeks were randomly assigned to the study. To determine the level of physical activity a stranded questionnaire and a dairy card were used. Following delivery, patients’ medical charts and Pain Visual Analogue Scale were used to collect data on pregnancy outcomes. Apart from the initial recruitment, two pregnancy interviews were carried out at two different times during gestation to assess gestational age specific activity level and a brief post-partum interview was done in order to collect data on labor pain. The first pregnancy interview was done around mean gestational age of 224 days. Participants were questioned with regard to the physical activity they performed at home, at occupation as well as transport. The respondents were asked about the types of physical activity they often engaged in. In depth quires were made, only on activities that cause at least some increase in breathing or heart rate. Therefore data on sedentary activities, such as watching television, reading or sewing, were not collected. Questions were correlated to predefined categories of physical activity as recreational, outdoor, indoor, child and adult care, transportation, work and other activities. Women were further questioned about lifting weights, carrying weights,
standing for a long period and stair climbing, either at occupation or at home. Frequency and duration for each activity were noted down. The questionnaire was designed to recall activity during the week prior to the interview. The participants were therefore questioned as how many times in the past week and on average for how many minutes or hours usually they engaged in that particular activity. Women were interviewed again around the mean gestational age of the 252 days. A small percent (7%) of these interviews were done over telephones. At each session the diary cards were collected back from the participants. To determine the level of physical activity scoring method introduced in the questionnaire was used. Data on pregnancy outcomes were abstracted by direct observations and from the notes which were compiled by the medical personnel. The collected data were analyzed using SPSS statistical software programme, version 17. Two sets of analyses were done. The main analysis was to distinguish any existing relation between prenatal physical activity and the dependent variables which were preterm birth, birth weight, labor pain, mode of delivery and the length of delivery. Associations were evaluated by Chi Square Test. P value of less than 0.05 was considered significant. In another separate analysis, Chi Square test was repeated to examine a possible effects arising from certain physical activity that are considered as strenuous in pregnancy. Stair climbing, frequent lifting, walking for a purpose were the activities considered. In addition, odds ratios and 95% confidence interval were also estimated. These were based on 2*2 tables.

Results

In total seventy eight healthy pregnant mothers were enrolled in the present study. Data were collected, in reliable approaches and the analysis was performed by SPSS software programme (version 17.0). Chi-Square test was used to determine the relation between prenatal physical activity and birth outcomes. Further, the Odds Ratio for each outcome and its 95% Confidence Interval were also estimated.

Descriptive characteristics and distribution of pregnancy outcome among the study population. The study population consisted of seventy eight primi gravid mothers with singleton pregnancies. Of them the majority, 85%, were Sinhala speaking mothers. Average maternal age among the seventy eight women was 28.36 and almost a half of them were within age of 28 and 32. More than a fifth engaged in an occupation, even in late pregnancy. In general this study sample had more education. More than 80% had completed their secondary education. There were one reported history of miscarriages and one still birth. Almost all the participants received a good antenatal care. Approximately one third of women in the sample had emergency cesarean delivery. There was one recorded post-partum death of a newborn.

Table 1: Relationship between maternal prenatal physical activity level and the outcomes.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Mild</th>
<th>Moderate</th>
<th>P value</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gestational age</td>
<td>12.7</td>
<td>3.2</td>
<td>0.149</td>
<td>4.39</td>
<td>0.503-38.403</td>
</tr>
<tr>
<td>Low birth weight</td>
<td>14.5</td>
<td>16.1</td>
<td>0.882</td>
<td>0.91</td>
<td>38.403</td>
</tr>
<tr>
<td>Mode of delivery</td>
<td>17.2</td>
<td>41.93</td>
<td><strong>0.015</strong></td>
<td>0.284</td>
<td>0.261-3.174</td>
</tr>
<tr>
<td>Labor pain (less than 7)</td>
<td>20.5</td>
<td>16.1</td>
<td>0.732</td>
<td>1.29</td>
<td>3.174</td>
</tr>
</tbody>
</table>

This follows the results from Chi Square Test and the Odds Ratio. A significant relation was found between maternal physical activity during pregnancy and the mode of delivery. Women who failed to engage in physical activities to meet the recommendations were more likely to have emergency cesarean deliveries compared with their moderately active counterparts. (p = 0.015). Except for the mode of delivery, no significant difference was seen between maternal physical activity level and any of the other variables assessed (p=0.149). The incidence of preterm birth was 8.9%. Estimated Odds indicated women who were moderately active across gestation were at approximately three folds higher risk of a premature infant. The average gestational age difference is 0.27. The birth weight of the infants of women who were moderately active in pregnancy did not differ from women who were mildly active. The birth weight averaged at 3.01606kg and 2.24989 kg in moderate and mild groups respectively. Further, prenatal physical activity level did not appear to be significantly associated with the pain at labor. (P= 0.732). However tests for Odds indicated, women who were mildly active across pregnancy had a higher risk of experiencing a severe pain at child birth, compared with moderately active women.
**Relationship between maternal physical activity in pregnancy and length of delivery** Average length of labor was 1.47h lesser among less active women compared with moderately active women. However this was not scientifically significant (p=0.563).

<table>
<thead>
<tr>
<th>Variable</th>
<th>% Preterm births</th>
<th>% LBW births</th>
<th>% Labor pain</th>
<th>% Mode of delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climbing Stairs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>18</td>
<td>35.71</td>
<td>53.3</td>
<td>91.66</td>
</tr>
<tr>
<td>No</td>
<td>82</td>
<td>0.000</td>
<td>0.000</td>
<td>0.279</td>
</tr>
<tr>
<td>Walking for a purpose(4≤day/wk)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>46</td>
<td>11.11</td>
<td>22.8</td>
<td>71.42</td>
</tr>
<tr>
<td>No</td>
<td>10</td>
<td>0.541</td>
<td>0.099</td>
<td>0.025</td>
</tr>
<tr>
<td>Lifting objects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>44</td>
<td>7.7</td>
<td>9.3</td>
<td>95.45</td>
</tr>
<tr>
<td>No</td>
<td>56</td>
<td>20</td>
<td>27.77</td>
<td>86.66</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>23</td>
<td>0.002</td>
<td>0.005</td>
<td>0.299</td>
</tr>
<tr>
<td>No</td>
<td>77</td>
<td>-</td>
<td>4.76</td>
<td>74.07</td>
</tr>
<tr>
<td></td>
<td>27.7</td>
<td>38.8</td>
<td>16.66</td>
<td>11.76</td>
</tr>
<tr>
<td></td>
<td>0.001</td>
<td>0.002</td>
<td>0.816</td>
<td>0.111</td>
</tr>
<tr>
<td></td>
<td>3.39</td>
<td>8.33</td>
<td>7.5</td>
<td>31.14</td>
</tr>
</tbody>
</table>

An additional analysis was done to determine whether certain physical activity variables, which are considered as strenuous in pregnancy, are correlated with the birth outcomes. Climbing stairs, walking for transportation more than 4 days per week and lifting weights more than six kg either at home or at employment were the activity domains tested. In addition, the relation of occupation was also assessed. Table 4.3 exemplifies the findings of the Chi Square Test with the estimated risk ratios.

**Discussion**

The aim of this study was to identify the association between maternal physical activity during pregnancy and birth outcomes in Sri Lankan women. Gestational age and infant birth weight were the main outcomes of focus. Influence of prenatal physical activity on labor pain, length of labor and mode of delivery were also studied. Except for the mode of delivery none of the other variables assessed was significantly related to the maternal physical activity level across gestation. All the participants were reckoned either into moderately or mildly active groups according to the MET values used in measuring physical activity level. Of them 60% (n=47) were moderately active by the time of the first pregnancy interview. Generally, almost all participants engaged in similar activities in housekeeping activity domain, with varying durations and frequencies. Engage in any kind of exercise was rare. Walking was the most preferred recreational activity observed, yet infrequent (11%, n=9). Some women reported stair climbing, frequent lifting, walking for transportation and activities related to child care. 16% (n=13) of women continued their occupation late into gestation. By the time of the second pregnancy interview the figure was practically identical, with an inconsiderable diminution in outdoor activities and walking.

Incidence of preterm birth was 9% of all singleton pregnancies corresponding to a total number of seven. There appeared no significant relation (p=0.149), between preterm births and the maternal physical activity characteristics considered. This finding is generally consistent with a considerable number of studies in literature [Jukic et al.2012; Rice & Fort.1991; Horns et al.1996; Klebanoff et al.1991; Lokey et al.1990; Alderman et al.1998; Pinzon et al.2012] The findings of the present study further agree with a systematic analysis of 3,313 articles, in which the overall findings have indicated no apparent association between maternal physical activity and gestational age of their offspring. (Shussel et al.2008) The results of the present study are inconsistent with the findings of some studies where either a protective or an adverse relationship between vigorous physical activity and preterm births has been found. Yet, these studies have addressed solely one type of physical activity instead of assessing physical activity as a whole. [Hall & Kauffmann.1987; Evenson et al.2002; Strenfeld B. 1997. Dabrowska & Siedlecka.1996] The Odds on gestational age showed two folds greater risk, which was not scientifically significant, in the moderate group. It is assumed that the relatively small number of preterm births in both groups might have resulted in these excess odds.
More importantly, it is worth to note a considerable proportion of women gave birth to premature infants around completed 224 days of gestation. Since the current study particularly focused on physical activities during last trimester this proportion could not be adequately interviewed and had to exclude from the final analysis. The additional analysis showed significant influences of stair climbing, lifting weights and employment late into gestation on the gestational age.

Infant birth weight and labor pain also did not indicate a scientific relation with the physical activity level during pregnancy. Both of these were seemed to have in higher odds among the mildly active group. Low birth weight incidence was also moderately low (15.4%) in the current study population as it was seen with preterm births. Birth weight did not differ by any level of physical activity (p=0.882) and averaged at 2.98 kg. The highest mean birth weight was observed to have in the infants of moderately active women. The findings of the present extends the findings of a number of studies. [Horns et al. 1996; Jahromi et al. 2011; Rad & Jahamshiri, 2013; Klebanoff et al. 1990; Rice & Fort, 1991; Lokey et al. 1991; Melzer et al. 2010; Shlussel et al. 2008; Forouhari et al. 2008] yet identifies controversies and conflicting findings with a handful of earlier studies [Alderman et al. 1998; Pivarnik et al. 1998; Bell, Palma & Lumley, 1995]. Four types of physical activities in particular seemed to pose a negative effect on the birth weight. Likewise, stair climbing, lifting heavy weights, walking for transportation and occupation in late pregnancy were considered as hazardous. Of these, impact of stair climbing was seen to be almost identical to its effect on the duration of gestation. Effects of repetitive lifting of heavy weights and employment were comparatively lesser on neonatal weight at birth than their effects on gestational age. On the contrary walking for a purpose more than 4 days a week was also found to be strongly related to low birth weight.

The Pain Analogue Visual Scale score in the majority (80%, n=46) was more than seven. As for the Odds the highest possibility of experiencing a severe pain was observed among mildly active women (OR= 0.129). Nevertheless, there appeared no significant relation between physical activity level and the perceived exertion at delivery. The perceived pain at labor averaged at 8.321 in this study population. Corresponding to the additional analysis, stair climbing, walking for transportation and frequent heavy lifting were associated with higher odds of experiencing severe pain at childbirth. Prepartal physical activity level was significantly related to the mode of delivery. (p =0.015) Mothers who were mildly active were discovered to have three folds greater odds compared with the moderately active women. Twenty seven percent of women had emergency cesarean deliveries. Of them nearly two thirds (n=13, 62%) were mildly active during gestation. This is in agreement with the findings of De Silveria & De Mattos Segrat(2012) and few more studies [Hall & Kaufmann, 1987; Rad and Jahamshiri, 2013]. In the current study population the duration of labor did not exhibit a significant difference with respect to the maternal physical activity level during pregnancy. This is equivalent to the findings of Horns P N et al.1996 and Lokey et al. 1991; Kradel & Kase, 1998, who also found no convincing effect of last trimester physical activity on the length of delivery. Mean length of labor was, 4.66 hours and it was observed that moderately active women had relatively longer deliveries.

It is acknowledged that the major limitation in the present study was the small sample size employed. Some of the outcome variables were therefore distributed in limited ranges within the study population. This sometimes hampered the identification of a true association. Physical activity levels of the participants were determined by the moderately active women. Twenty seven percent of women had emergency cesarean deliveries. Of them nearly two thirds (n=13, 62%) were mildly active during gestation. This is in agreement with the findings of De Silveria & De Mattos Segrat(2012) and few more studies [Hall & Kaufmann, 1987; Rad and Jahamshiri, 2013]. In the current study population the duration of labor did not exhibit a significant difference with respect to the maternal physical activity level during pregnancy. This is equivalent to the findings of Horns P N et al.1996 and Lokey et al. 1991; Kradel & Kase, 1998, who also found no convincing effect of last trimester physical activity on the length of delivery. Mean length of labor was, 4.66 hours and it was observed that moderately active women had relatively longer deliveries.

It is acknowledged that the major limitation in the present study was the small sample size employed. Some of the outcome variables were therefore distributed in limited ranges within the study population. This sometimes hampered the identification of a true association. Physical activity levels of the participants were determined by the total MET hours per week. Code for each MET value was abstracted from the published metabolic tables (MET) in Compendium of Physical Activities (Ainsworth et al. 2000). It should be noted these MET values are meant for healthy non pregnant adults. A residual uncertainty related misclassification in exposure is therefore impossible to underestimate. Diary card and the responses for the questionnaire were self-reported and the questionnaire was designed to capture physical activities performed in the week prior to the two pregnancy interviews. It was sometimes problematic to recall of the number of hours or exact numbers of sessions. Thus a recall bias was most likely to occur. Measurement of the labor pain was also self-reported. Some of the participants were not being able to accurately recall the intensity of pain which might have resulted in over or under reporting. Due to methodological flaws, it is difficult to obtain a true relation between physical activities during pregnancy on birth outcomes. Hence, it is necessary for the future studies to implement large prospective studies with high quality data collecting approaches. In the meantime women should be encouraged to remain active in pregnancy despite of all cultural and social norms.

References


Evaluation of Refusal Risk Factors Associated With Cohort Minification in Longitudinal Population Health Research

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Background
In a longitudinal study subjects are followed over time with continuous and cross sectional monitoring of risk factors of ill health, existing understanding of normal health and diseases, to ascertain the community burden of diseases. Participant’s refusal and dropout are serious problems to the researchers during the follow up in a longitudinal study. The consequence of this problem is the shrinking of the cohort size, thereby decreasing the observational strength of the study. High refusal rate undermine the validity of research findings due to household replacement. Researchers have frequently encountered difficulties regarding refusals from households or individual participant leading to under representation under-representation in causing cohort reduction.

Objectives
- To examine the causes of refusal associated with enrollment and participation in the longitudinal surveys.
- To assess the organizational strengths and drawbacks related to refusal by the SWOT (Strengths, Weaknesses, Opportunities and Threats) Analysis.
- To plan the appropriate management policy for minimization of refusal rate.

Methodology
The self reported data will be collected from direct interview through a structured questionnaire. An informed consent form will be completed before the data collection from all participants who refused to continue in the longitudinal study. The results from the structured questionnaire will be analyzed by SWOT tool.

Result & Conclusion
Causes of refusal as well as it will provide basic information to ascertain organization’s strengths and shortfalls, opportunities that can be offered and threats faced by the organization by a comprehensive strategic planning called Strength Weakness Opportunity & Threats (SWOT). Strengths and weaknesses are often internal factor to the organization, while opportunities and threats generally relate to external factors. The analytical is explained to provide evidence of causes of refusal besides basic information to ascertaining strength and shortfalls also threats faced by the organization. It may also reveal windows of opportunities otherwise missed. On the basis above information a structured management policy to be established to reduce and control dropout rates.

Keyword: Longitudinal, cohort, SWOT
Risk factors for behavior problems among preschool children

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Theme: 05

Abstract
Preschool age is the earliest point in child’s life where behaviour problems and related risk factors can be easily identified intervene to reduce lifetime negative consequences.

Objective: To determining risk factors for behavior problems among preschool children.

Methodology: Case-control study was conducted among 169 children with behavior problems and 169 controls attending preschools in Medical Officer’s Health (MOH) area of Kaduwela.

Results: Logistic regression analysis revealed, being a male (OR=12.80, CI=4.35-37.63, p=0.000), having antenatal complications (OR=5.96, CI=1.87-19.02, p=0.003), having low birth weight (OR=3.07, CI=1.26-7.49, p=0.014) and postnatal complications (OR=4.56, CI=1.61-12.90, p=0.004) as biological risk factors and low nutritional status (OR=4.12, CI=1.22-13.99, p=0.023) as a childhood related risk factor for problem behavior. Having low monthly income (Rs.5,000-10,000) (OR=50.71, p=0.000) was the strongest risk factor found in multivariate analysis. Frequent consumption of alcohol by father (OR=1.76, CI=5.19-42.35, p=0.000), parental arguments (OR=2.5, CI=1.25-5.36, p=0.010), having low maternal educational level (OR=4.49, CI=0.01-10.03, p=0.000) were identified as parental risk factors while maternal employment status inside or outside the house in part time basis (OR= 0.01, CI=0.00-0.10, p=0.000) and child cared during day time by mother (OR=0.03, CI=0.00-0.25, p=0.001) was identified as significant protective factors for behavior problems.

Conclusion: Risk factors that children exposed during their life-course have significant associations with behavior problems among preschool children.

Key words: Behavior, children, risk factors
Socioeconomic inequality in health care utilization among elderly having chronic diseases in India

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Abstract:
India is vast country facing demographic and economic transition simultaneously. Social and economic inequality is increases as development take place. Social and economic factors are the one of the major determining factors of individual’s health and health care utilization. Objective of this study is to find prevalence of chronic diseases and to assess the socioeconomic inequality in health care utilization among elderly in India. The Study on Global Ageing and Adult Health (SAGE) wave-1 data is used for analysing objective of this study. SAGE is run by WHO in various countries as a part of the Longitudinal Study Programme which provides data on various domains and it helps to understand the process of global ageing. In India WAVE 1 was collected during 2007–09 with the 12198 sample size. Descriptive statistics were used to analyse the results. Cross tab and concentration index is use to analyses results of the study. Prevalence of chronic diseases is much higher among male (36.05%), widowed or separated (41.71%) and urban (37.89%) people compare to their counter parts. Concentration index elucidate that occurrence of chronic diseases (-0.02501) and health care utilization (-0.09037) is concentrated among richer quintile as compare to poorer but there is higher income inequality in health care utilization than occurrence of chronic diseases. Educated people are getting more health care services as compare to less educated people.

Keywords: Socioeconomic inequality, health care utilization, elderly
Prevalence and knowledge on causes of diarrhea: A cross sectional study in Mkuranga district, Tanzania

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Background: Diarrhea is known to be the major cause of mortality in children aged less than five years old. Although mortality from diarrheal disease is decreasing globally, morbidity is not. Objectives: The objectives of this study were to determine the prevalence of diarrhea among under-fives and assess knowledge on causes of diarrhea among adults in Mkuranga district Tanzania. Methods: Interviews with heads of households and mothers/caretakers of children below the age of five years, observations and census in the participating households were the methods of data collection employed by this study. Results: The prevalence of diarrhea in children below the age of five years as reported by their mothers/caretakers is 6.1%. The greatest prevalence was recorded in the age group 18 – 23 months (15.8%). Less than half of the respondents 285 (48.3%) had comprehensive knowledge on causes of diarrhea. Respondents in the 1st least poor quintile were less likely to have little knowledge on causes of diarrhea compared to respondents in the 4th poorest quintile. Respondents with little knowledge on causes of diarrhea were more likely to have poor hand-washing practice and to have received water, hygiene and sanitation education. Conclusion: Prevalence of diarrhea among children below the age of five years in the studied wards of Mkuranga district is 6.1%. The mothers and caretakers studied had poor hand-washing practice and inadequate knowledge about causes of diarrhea. Plans for the provision of education on water, sanitation and hygiene education in the study area should consider structural and social factors.

Key words: Diarrhea, Water, Hygiene
Drug abuse behavior and factors related to drug-addiction among the hill tribe youths of Lower Northern Thailand

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Abstract
Drug-addiction can cause a negative impact that has been documented well in the literature on health and behavior. The objective of this study were to explore the drug abuse behavior and factors related to the drug-addiction among the hill tribe youths of lower Northern Thailand. The sample size was 900 hill tribe youths. Questionnaires were used as the research instruments. Percentage, odds ratio, and conditional logistic regression were used for statistical analysis. The results showed that 25.9 percent of youths take alcohol, 13.9 percent smokes and 10.9 percent of youths use addictive substances. The youths who prefer nightlife were likely to use addictive substance 1.27 times more than those who did not go out in the night. Youths from poor family relationship seems to use addictive substance 1.89 times more than those from good family relationship. Those who were made to buy cigarette and alcohol by their relatives are likely to use addictive substances 1.57 and 1.20 times more than the other youths respectively. The youths who had sex before are likely to use addictive substance 2.54 times more than those who never had sex before. Those who stay at home alone after the school are likely to use drugs 1.09 times more than those having accompany after the school.

Keyword: Drug abuse, hill tribe and youths.

A tool to review gender equality of human resource documents for public sector nurse-midwives in Bangladesh

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In Bangladesh, public service rules are the same for males and females, but do not necessarily adhere to gender equality requirements to ensure equitable working conditions for the women particularly the nurse-midwives (NMs), having serious consequences in the quality of nursing education and services. The Gender Equality Audit Tool (GEAT) developed by the Human Resource for Health Project in Bangladesh under Ministry of Health and Family Welfare (MOHFW) effectively measures gender sensitivity of current key HR documents related to NMS.

The GEAT analyzes the qualitative aspects and uses an indicative quantitative measurement framework. It assesses presence of key gender provisions related to equity, equality empowerment, working conditions as applicable to a particular HR document and estimates the gender sensitivity in three scoring levels: “low” (1 – 40%), “moderate” (41 – 70%) and “high” (71 – 100%). 11 HR documents for NMs were gender audited by GEAT in 2013. Gender sensitivity was found high in 1 (9.1%), moderate in 9 (81.8%) and low in 1 (9.1%). The process also identified issues that required policy attention e.g. safety and health, career path, training and education and workplace harassment.

The GEAT has been adapted from the toolkit developed by Peking University (2008). The GEAT can add significant value in strengthening the health system through addressing gender sensitiveness in policies and procedures to ensure a more equitable working environment for the NMs.

Keywords: gender sensitivity, human resource, nurse-midwives, GEAT
Master of Population, Reproductive Health, Gender and Development of East West University: The first ever multidisciplinary graduate programme focusing reproductive health in a comprehensive approach in Bangladesh.

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Abstract:
Global health has a positive logical relationship with level of education, information and communication, economic stability and quality & equitable health service. Being a developing country, Bangladesh is on right track to achieve most of the millennium development goals (MDGs) 1, 2, 4, 5 etc. The country is working hard on issues like gender equality and empowerment of women, environmental sustainability and communicable disease control including HIV/AIDS. Although almost one third of the population of Bangladesh is young people (10-24 years), their health needs, especially reproductive health needs are yet to be addressed in a comprehensive and friendly way. In this context “Master of Population, Reproductive Health, Gender and Development (MPRHG)” of Department of Social Relations, East West University has created a multidisciplinary platform for the first time in Bangladesh where health personnel, engineers, social workers and students from multidiscipline like business, economics etc mingle together to get and share the knowledge of population dynamics, poverty, statistics, gender issues, reproductive health and rights, family planning, adolescent health, sexually transmitted disease including HIV/AIDS. For the young undergraduate students basic courses of reproductive health are offered to discuss prevailing health problems with preventive measures to improve their early health seeking behavior. The MPRHG program aims to develop healthy young graduates equipped with comprehensive knowledge of population & reproductive health to deal with the global reproductive health problems.

Keywords: Reproductive health, Young people, Bangladesh.

Delayed motherhood in India: a burden on public health or a reproductive right?

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Abstract
Changing socio-economic role of women, higher education, increased participation in labour force combined with availability of contraception and legalisation of abortion, more and more women are delaying their first childbirth. These changing patterns are having a significant public health impact resulting in increased risks of stillbirth, preterm birth and caesarean delivery and even childlessness. The study tries to understand the socio-economic determinants of delayed motherhood and its implications on the health of mother and child. The study finds that the trend of delayed motherhood is increasing at a greater rate especially among urban and educated women in India. According to National Family Health Survey, NFHS-I (1992-93), 1.09 percent women delayed their first childbirth after the age of 30; which increased to 1.26 percent in NFHS-II (1998-99) and then 2.06 percent in NFHS-III (2005-06). Around 36 percent mothers of 35 years and above faced problem in conceiving. Also, around 33 percent women above 35 years had to undergo caesarean delivery in India in 2005-06. More urbanized states like Goa, Kerala, Karnataka, Tamil Nadu, New Delhi, and Maharashtra have higher percentage of delayed motherhood. Awareness about the implications of delayed childbearing is required and an estimate of the
increase in this trend will help us equip our health system in order to meet the demand for increased health care services. (218 words)

**Keywords**: Delayed motherhood, health implications, determinants
The effectiveness of the Health Extension Program in Ethiopia – What’s gender got to do with it?

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Abstract

Aim: To critique the role of gender on the Health Extension Program in Ethiopia.

Rationale: To achieve MDGs 4 and 5 by 2015, Ethiopia is improving access to and strengthening facility-based Maternal, Neonatal and Child Health services, and increasing skilled birth attendance. The Health Extension Programme (HEP) is the primary vehicle for prevention, health promotion, behavioural change communication, and basic curative care. Over 30,000 female Health Extension Workers (HEWs) have been deployed, mostly to rural areas. HEWs have effectively promoted family planning and antenatal care but their impact on reducing the mortality and morbidity of women and their newborns has been limited.

Methods: A literature review to analyse gender dimensions, gender equality issues and gender disaggregated data, and a pilot study utilising a key informant research approach.

Findings: Gender analysis of the role of HEWs indicates that the role and effectiveness of the HEP may be limited due to the gender of the HEWs. HEWs negotiate gender biases at various levels starting from their own homes, the communities they work in and the health systems they belong to. Gender biases influence how HEWs work is recognised, valued and supported at both a professional and personal level.

Implications for global health policies, programs and actions: Health systems often mirror and sometimes exacerbate inequalities in society. The resulting health system outcomes can be inequitable and unproductive as they restrain the true capacity of HEWs in the Ethiopian health system.

Keywords: gender analysis, health extension workers, Ethiopia
Home visits to improve breast health knowledge and screening practices in a less privileged area in Jordan

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Abstract

Background
This study aimed to assess the effectiveness of an educational intervention through home visits, including offering free mammography screening vouchers in changing women’s breast health knowledge and practices in a less privileged area in Jordan.

Methods
2400 breast health awareness home visits were conducted and 2363 women (median age 41) answered a pre-test. After a home-based educational session, 625 women aged 40 years or older were referred to free mammography screening. Six months later follow-up visits were conducted to 596 of the 2400 homes that received a first visit and 593 women (median age 42) answered a post-test. The women’s retained breast health knowledge, the changes in their reported breast health practices and their usage of the free mammography voucher, were assessed.

Results
The mean knowledge score increased significantly (p<0.001) from 11.4 in the pre-test to 15.7 in the post-test (maximum score: 16). The post-test also showed significant improvement (p<0.001) in women’s perceived breast self-examination (BSE) knowledge, reported BSE practice and mammography screening. There was a positive association between receiving a free voucher and mammography screening (p<0.001).

Conclusions
Home visits by local community outreach workers that incorporated education about breast cancer and breast health in addition to offering free mammography screening vouchers were effective in improving women’s breast health knowledge and practices in a less privileged area in Jordan.

Key words: educational intervention, home visits, community outreach
Environmental risk factors for snake bites in the district of Ampara, Sri Lanka

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Introduction: Snake bite is an environmental hazard for rural residents in Sri Lanka. This study aimed at assessing the risk factors for snake bites in the household related environments in the district of Ampara.

Method: A community based cross-sectional study was designed to assess the household related environmental risk factors for snake bite in a sample of 2500 households selected using a systematic random sampling method. An observational checklist was used to assess indoor and outdoor environment.

Results: 69.8% houses were partially constructed. In 41.5%, the floor was made up with rough cement or cow dung while 50.7% had tiled roofs. Walls were built using brick and cement in 75% houses and in 13.6%, walls were made up of clay. Cervices in the walls could be seen in 76.5% houses. 28% of houses did not have electricity and in 99.5% houses, toilets were separately located outside the house. 61.5% had an agricultural setting within 0.8 meters of the house. 52% households stored agricultural products inside the house. In 66% of houses, residents slept on the floor.

Conclusion: Indoor and outdoor environment of rural residences in the district of Ampara showed many features that increase the risk of snake bites among the residents.

Key words: Snake bite, Environmental risk factors, Community based Study

A Qualitative Study of Barriers to Food Security among Internally Displaced People in the Rift Valley, Kenya

Hasan Zubair

Abstract

Introduction
It is estimated in 2013, 25.8% of the Kenyan population is undernourished. Internally Displaced People (IDPs) in the Rift Valley were uprooted from their homes in 2007 following post-election violence. They are among the most vulnerable population for undernourishment. This paper seeks to identify barriers towards food security among IDPs subsequent to resettlement.

Methods
Sixteen (16) interviews in total were collected by three members of the research team. Participants were male, English-speaking residents of an IDP camp in the Rift Valley. Semi-structured interviews were conducted and recorded on a voice recorder. Interviews were subsequently transcribed and analysed to identify key themes and issues.

Results
The interview focused on issues pertaining to food security; however this paper focuses in particular on barriers to attaining food security for residents of the IDP camp. The main issues identified were poor access to water, lack of capital or government assistance to a level which would allow self-sufficiency and lack of stable supply of cooking fuel.

Discussion
This study has, though qualitative methods, explored the barriers to food security at the IDP camp. It is estimated that 80% of the Kenyan population is dependent on agriculture for their livelihoods. In this context it is of utmost importance that the people of IDP are able to derive their income from robust agricultural practices, where other forms of income are sparse.

Keywords:
Internally displaced people, Food security, Nutrition
“We have been working overnight without sleeping”. Traditional Birth Attendants’ practices and perceptions of post-partum care services in rural Tanzania.

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The post-partum period is defined by the World Health Organization as the first 42 days after childbirth. In many low-income countries, formal post-partum coverage is much lower than that of skilled delivery and antenatal care. Research on role of Traditional Birth Attendants (TBAs) during the post-partum period is scarce. The aim of this study was to explore TBAs’ practices and perceptions in skilled post-partum care. Qualitative in-depth interview data was collected from eight informal and three formal TBAs. Five multiparous women who were clients of informal TBAs were also interviewed. Data were transcribed verbatim. An Open Code software program was used for the data-coding process. Qualitative content analysis was used to analyze data. The study found that TBAs conduct close post-partum follow-ups on women and treat complications locally when they arise. In addition, they perceive that utilization of hospital-based post-partum services among women is important for the baby and when complications occur. They report lacking formal post-partum care training. Their source of knowledge was their parents and in-laws and they are poorly linked with health system. The Ministry of Health and Social Welfare and other stakeholders should raise awareness of the postpartum services use and ensure the quality of service provided. Cultural accessibility and integration of some beneficial rituals implemented by TBAs could prove useful. Collaboration between TBAs and formal health-care services is needed.
**Model Developing Regional Health Management System among The Second Regional Health Service of Ministry of Public Health, Thailand**

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**Abstract**

Health System and Ministry of Public Health had been reformed since 2002 to 2013 influencing decentralization to regional health system and provincial health system to solve areas health problems and health management system. The objective of this participatory action research was to identify problems of regional health care management, develop model of virtual organization, and evaluation of the model in the second regional health service, Ministry of Public Health, Thailand. The methods were 3 sessions including (1) Training 25 provincial staffs and 10 mentors by workshop, groups discussion, and observing activities of virtual offices that purposed to problems identification (2) developing the model and (3) evaluation.

The finding found that the major of health care management in this regional health area was data management. The model development of virtual organization was data information by Tele-working, facebook, email and websites consisting of 5 operating desks: Service Plan, Human Resource Management, Information System, Financial System, and Control and Risk Management. In each operating desks had worked in data collection and analysis for serving Regional Health Board of working evaluation and decision making in health care management.

The study suggested that virtual organization could be appropriately developed for health care management of regional health service system. Moreover, some problems such as staffs workload in provincial offices should be support and center office of regional health service would be necessary.

**Keyword**: Regional Health System, Virtual Organization, Provincial Operating Staffs, Health Care Management

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**Creating Culturally Competent Physicians Starts in Medical Training**

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As global health issues impact countries world-wide and nations become increasingly composed of multi-national populations, medical school training must expand its horizons to address issues of creating culturally competent physicians. Understanding and effectively treating ethnically and culturally diverse groups of patients is a critical piece of quality health care and should be a formative part of medical training beginning in the preclinical years. Physicians need to understand the norms and values of people they treat. At the Ohio University Heritage College of Osteopathic Medicine, student doctors are involved in learning cultural competency through the format of lectures and readings. However, our medical school goes beyond this often employed format to provide reality-based interview experiences with international community members. Using a medical diagnosis that is strongly impacted by differing belief systems and cultural background, the interview is structured as a medical office visit. Students receive feedback from physician preceptors and from the “patients” themselves in an active group dialogue and in written format. All Second Year Medical Students (133) were involved and rated their experiences; 91% rated skills in cross cultural communication as very important. Only 9% of students rated cultural competency skills as moderately important, and no students rated the importance any less. Additional data will be reported from students and patients.

**Keywords**: Medical training; cultural competence; cultural communication
**Rural and Tribal Community Health Development by Healing Techniques: Case Study of a Village, Piranwadi**

Swami Hardas, Sanjay Potey

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**Abstract:**
Swami Hardas Life System (SHLS) incorporates healing exercises and techniques developed by Dr. Swami Hardas and the system has been found effective, considerably economical, and simple for solving health problems of the individuals and also other problems concerning life such as peace. The research has been made on application of this system for solving the health problems of mass of the people, particularly in rural and tribal areas where the present (medical) system is out of reach of such people and unaffordable to them. Furtherance the research activities, the department of health (called AYUSH) of Government of Karnataka state (India) participated in a pilot project to study the application of SHLS in improving the health of the people in village named Piranwadi in Belgaum district of the state. The pre checkup and post checkup measurements on the selected health parameters such as blood pressure, hemoglobin and blood sugar level in the blood of the villagers before and after the use of SHLS exercises and techniques revealed that SHLS is useful in improving the health in the people without medicine and with negligible expenses. The villagers as well as the participants appreciated the utility of SHLS. Development of such system shall contribute considerably to meet the health needs of the underserved and promote philanthropy in the field of public health.

**Keywords:** System, Healing, Public Health

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**Assessment of Attitudes and Barriers among Doctors and Patients Regarding Information Therapy**

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**Abstract**
Introduction: The charter of patients’ right recognizes patients’ rights to information as a fundamental right. Information Therapy (Ix) is the prescription of right information to the right person at the right time in order to support the patient in making health-related decisions. Ix applications can provide appropriate preparation so that the limited time in clinic is optimized for both patient and clinician.

Objective:
To ascertain the attitudes of doctors and patients regarding Information Therapy in Chandigarh.

Methodology: A cross-sectional study was conducted on 100 doctors and 100 patients of public and private hospitals in Chandigarh, India in November, 2013 by using a structured questionnaire. The data was analyzed by descriptive statistics and chi square test (SPSS-16).

Results: Majority of doctors (92%) were positive about providing health information to the patients but only 10% were aware of term ‘information therapy’. The clinicians preferred print media over online sources of health information. The main barriers were lack of physician’s time and poor literacy level of patients. From patients’ perspective, 81% wanted information related to their condition and 20% felt that doctor will decide in favour of them and did not want any information. Significant association was found between education of the patients and the information need (p<0.05)

Conclusion: Physicians’ and patients’ perspectives regarding Information therapy may play a key role towards the delivery of quality healthcare services.

**Keywords:** Information Therapy, Health Information, Attitudes
Towards strengthening human resource policies and rules for public sector nurse-midwives in Bangladesh

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Bangladesh, with an adverse gender environment and low social status of nurses, is making efforts towards developing and implementing improved and gender responsive human resource (HR) policies and rules for nurse-midwives (NMs). The DFATDfunded Human Resources for Health (HRH) project (2012-17) is providing technical assistance to the Human Resources Management Unit (HRMU) of the Ministry of Health and Family Welfare (MOHFW) leads this intervention. Objective of this intervention being to review existing, and where needed develop new, key HR documents in support of public sector NMs in Bangladesh with sound global practice and gender sensitivity requirements.

A national level “Gender Sensitive Human Resource Task Team” (GSHRTT) has been formed to guide the HR document review and development process. Following consultative processes two HR document audit tools; one a general HR Document Audit Tool (HRDAT) and the other incorporating a gender equality perspective, the Gender Equality Audit Tool (GEAT) were developed. Eleven HR documents reviewed against HR best practices and gender responsiveness and need for revising/developing new HR policy documents identified.

This initiative to review and strengthen HR documentation in support of nurse-midwives has received relatively little attention within the larger global human resources workforce crisis. With a focus on nurse-midwives, Bangladesh’s MOHFW is aiming to address a central element of the global crisis – essential and gender sensitive HR documentation to support public sector nurse-wives.

Keywords: HR Documents, Audit Tool, HR best practices
Health workers’ perceptions of facilitators and barriers for institutional delivery in Tigray, Northern Ethiopia

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Background
The Ethiopian Ministry of Health launched a community-based health care system in 2003, the Health Extension Programme (HEP) to tackle maternal mortality. Despite the strong efforts, universal access to services remains limited, particularly skilled delivery attendance. With the help of ‘the three delays’ framework, this study explores health service providers’ perceptions of facilitators and barriers for utilization of institutional delivery in Tigray, a northern region of Ethiopia.

Methods
Twelve in-depth interviews were carried out with eight health extension workers (HEWs) and four midwives. Each interview lasted between 90 and 120 minutes. Data were analyzed through a thematic analysis approach.

Results
Three themes emerged from the analysis: ‘increased community awareness,’ ‘organization of the community’ and ‘hospital with specialized staffs’ were recognized as facilitators. On the other hand, ‘delivery as a natural event,’ ‘cultural tradition and rituals,’ ‘inaccessible transport,’ ‘unmet community expectation,’ and ‘shortage of skilled human resources’ were represented as barriers for institutional delivery.

Conclusions
The participants in this study gave emphasis to the major barriers of institutional delivery that are closely connected with the three delays model. Despite the initiatives being implemented by the Tigray Regional Health Bureau, much is still needed in enhancing the humanization approach of delivery care on a broader level of the region.

Keywords: Three delays model, thematic analysis, Institutional delivery, Health extension program.
Barriers and Facilitators to Develop an Internet-based Public Health Training among Primary Health Care Workers in Rural China: A Qualitative Study

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Backgrounds: In rural China, it is essential to improve public health care workers’ working capacity through training. However, the health care workers are often unable to leave their institutions for training in fixed time and settings. We set out to perform an internet-based training in rural China to improve the health care worker’s working capacity. Prior to the training, this study was to describe primary health care workers’ perceptions on barriers and facilitators in internet-based training.

Methods: Four focus group discussions were conducted with primary public health care workers from township health centre and affiliated village clinics in two counties, Hubei Province in China during January to February in 2013. Audio recordings were transcribed verbatim and content analysis was performed.

Results: A total of 40 primary public health care workers participated in four focus group discussions. Accessing to computer and internet, basic computer skills, old age of the major workers and lack of motivation were the most frequently identified barriers. Policy support, effective supervision, time saving, ease of use of training platform, ease of understanding the training courses, and better interaction with the experts were identified as the facilitators to the internet-based training.

Conclusions: The information gathered from these focus groups can provide insight on the development and implementation of an internet-based training.

Keywords: Internet-based training; Public health; Barriers and facilitators.

Feasibility of integrating ‘tobacco control program’ in Public Health curriculum in India- Strategy and Approaches

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Introduction: Despite tobacco use being the largest preventable cause of death in the world, it is still amongst the little-taught and studied topics in public health curricula in India. This paper provides an overview of educational opportunities in tobacco control in various Public Health courses in India and experience of the School of Public Health, Post Graduate Institute of Medical Education and Research, Chandigarh, India in educating MPH students having diverse background in tobacco control.

Methods: The content analysis of various public health courses in India was conducted. The core domain identification of tobacco control using Delphi technique was supplemented by information collected from post graduate trainees of public health using nominal group technique. The initiatives undertaken by various departments relating to tobacco control of PGIMER was collated.

Results: Despite having adequate infrastructure (78%) and public health experts (85%) in public health institutions, the educational opportunities in tobacco control are meager and inadequate (30%). As far as PGIMER experience goes, the core modules of Tobacco Control which includes fundamentals of tobacco control, tobacco and health, tobacco use in India, economics of tobacco, tobacco surveillance, international frameworks and national policies, role of different stakeholders has been successfully included within the existing MPH curricula.

Conclusion: The feasibility of including core domains of tobacco control into the existing MPH Curriculum of PGIMER Chandigarh, India is established.

Keywords: Tobacco control, Public Health, Curriculum
Percentage of the population without access to 24*7 Emergency Obstetric Care (EmOC) services in Sri Lanka (2012)

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Abstract

Introduction:
Sri Lankan has demonstrated significant gains in maternal mortality reduction over the past and is seen to be stagnant for some time.

Methods:
The availability of 24*7 EmOC services was assessed in all Districts of Sri Lanka using the country adopted tools provided by Averting Maternal Deaths and Disability (AMDD) and partners. All base and above hospitals were assessed for capability to provide 24*7 EmOC services. Identified hospitals were mapped digitally. Census Information (2012) was used to estimate the percentage of the population lying outside a 30 kilometer buffer from these hospitals using geospatial analytical techniques. 30 kilometers was considered as distance that can be covered within one hour.

Results:
Only 2.9% of the entire population was outside a 30 kilometer buffer when the capability to provide EmOC services was considered (seven districts with 0.0% and a maximum of 25.5% observed in Monaragala). The % out of the total without access was 19.6% in Monaragala. When 24*7 EmOC services was considered, the percentage of the population without access increased to 19.3% with four districts having 0.0% and two districts having 100.0%. The percentage out of the total without access was highest at 17.4% in Matara.

Conclusions:
The access to EmOC decreases when 24*7 service availability is considered. Wide disparities exist in the access to EmOC and 24*7 EmOC services in the country needing correction for better EmOC care.

Keywords: EmOC, Service availability, Access to care
Delay in the Diagnosis of Tuberculosis and Initiation of TB Treatment in the Private and Public Health Sectors, Udaipur District, Rajasthan, India, 2013

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Background: Delays in the diagnosis and treatment of TB facilitates disease transmission in the community, so we conducted a study to evaluate the burden of and risk factors for delay in TB diagnosis and initiation of TB treatment among patients in the private and public sectors in Udaipur district, Rajasthan, India.

Methods: A retrospective cohort study was conducted among 100 new sputum-positive TB. Patients were interviewed in the intensive phase of treatment September 2013-November 2013Long total diagnosis delay (TDD) was defined as a time interval between first symptom to confirmed diagnosis>30 days. Long health treatment delay (HTD) was defined as a time interval between confirmed diagnosis to treatment initiation>7 days.

Results: We observed a median TDD of 55 days (range: 7-136 days) in the public sector and of 92 days (11-380 days) in the private sector. Long TDD in the private sector was significantly associated with middle-higher socio-economic status (Risk Ratio (RR): 2.95% CI: 1.3-3). The reasons reported from the private sector for long TDD were suspect TB patients not advised for sputum examination (RR: 42; 95% CI: 2.6-660), practise of self-medication (RR: 17.4; 95% CI: 1.1-267), or lack of awareness (RR: 9.7; 95% CI: 0.6-145). The median HTD in the public sector was 3 days (range: 0-14 days), and in the private sector, 2 days (range: 0-11 days) (non-significant difference).

Conclusions: Long TDD in private sector may be improved through sputum referral for all suspect TB cases and better education to all regarding TB.

Key words: diagnosis delay, treatment delay, Private sector, DushyanthiJayawardene, NalikaGunawardene
Knowledge, practices and attitudes regarding rabies among grade ten students in the Nugegoda education division

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Abstract

Introduction
Rabies still continues to contribute to the mortality, morbidity and economic burden of Sri Lanka, despite the very conducive environment prevalent in our isle for its elimination. A lack of knowledge, incorrect practices and unfavourable attitudes have been attributed as the main cause of this dilemma and awareness activities specially targeting children aged 15 years and younger have been advocated as a solution to bridge the gap between the present state of burden caused by rabies and the desired state of a rabies free country.

Objective
To describe the knowledge, practices and attitudes regarding rabies, among grade ten students in the Nugegoda education division.

Methods
A descriptive cross-sectional study design with multistage cluster sampling using probability proportionate to the size of the grade 10 student population was used to collect data from 694 students, using a self-administered questionnaire.

Results
The majority of students (68.2%, n= 473) were found to have a poor knowledge regarding rabies. However, of the 334 students who owned a dog, a majority of the dogs (74.9%, n= 250) had been vaccinated at some point or the other while 38.6% strongly disagreed that unwanted puppies should be dumped at a site away from their homes.

Conclusions
A majority of students had a poor knowledge regarding rabies although most had correct practices and favourable attitudes pertaining to the prevention of rabies.

Key Words: Adolescents, Animal Bites, Health Seeking Behaviour

Determinants of neck pain among office workers in Dhaka city

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Persisting neck pain is a common problem among office workers. With industrialization and growing economy, work related neck pain become a prominent problem and public health concern of occupational hazard. General objective of this study was to find the proportion of neck pain among office workers and determinants of neck pain.

A cross-sectional study was done in 10 private offices throughout the Dhaka city from July 2013 to December 2013. In this study 18.4% of the respondents have regular neck pain and 48.8% were having occasional neck pain which together give the percentage near 70% having neck pain to some extent. As an addition 77.8% respondent have shoulder pain either regular or interrupted. Most of the respondent having muscle spasm (55.7%) rest of the respondent inform pain related to abnormal sensation like burning, tingling, numbness. Most importantly as an outcome of neck pain 23.5% of neck pain sufferer needed sick leave from office due to neck pain during last 6 months which added an economical loss to the society. Multinominal logistic regression revealed the association regular exercise (P<0.001), rest time within work (P<0.05) and educational level (P<0.05) has statistically significant association with neck pain.

This study shows the burden of neck pain and its risk factors which can be used to get the preventive measures.

Keyword: Neck pain, Office worker, Dhaka
Abstract

A congenital disorder, or congenital disease, is a condition existing at birth and often before birth, or that develops during the first month of life regardless of causation. Of these diseases, those characterized by structural deformities are termed "congenital anomalies" and involve defects in or damage to a developing fetus. A congenital disorder may be the result of genetic abnormalities, the intrauterine (uterus) environment, errors of morphogenesis, infection, or a chromosomal abnormality. A cross sectional study was conducted in different tertiary level hospital of Dhaka city to assess the prevalence of congenital anomalies with high death rate and respondents knowledge about it. In our study total 125 of respondents were participated, they were actually secondary respondent that means parents of the primary respondents. Among them majority of the child were male and 46.4% were female child with mean age of 4.8±2.1. 42.4% of the respondents were Muslim and 38.4% were Hindu, although some respondents from other religion were also present. Most of the respondent’s education level was higher secondary, mainly service holder having average monthly family income of (10000-20000) tk. According to report 34.4% were having congenital heart disease, while 4% were suffering from goldenhar syndrome. 18.4% were suffering from Down syndrome, while 27.2% were suffering from different kind of cleft in their body parts. Some were deaf from birth. 3.2% having crouzone syndrome. Only 2.4% were suffering from spina bifida. Rests 4% were suffering from other congenital anomalies. Among the patients who are suffering from different kind of congenital heart diseases, ventricular septal defect were found prominent type of congenital heart problem. 68% respondent had more calorie intake during their pregnancy. No significant STD infectious was found. 45.6% had a family history of congenital anomalies. Majority of the family member were supportive to their child. But still we have to change various risk factors and also have to increase awareness among the people.
Lessons Learned: Challenges of North-South Partnerships for Awareness Building around Population Aging

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A health challenge that is of growing concern in Sri Lanka is the lack of awareness of dementia as a disease in the elderly or the unique challenges faced in providing quality care. Dementia, characterized by memory loss and impairment, is becoming one of the most burdensome chronic diseases associated with population aging. The population aged 60 years and older is projected to reach 22% by the year 2030, making Sri Lanka among the fastest aging countries in Asia. We previously described engaging in a partnership with the University of British Columbia’s memory clinic and the Lanka Alzheimer’s Foundation to develop an operational Dementia clinic in Colombo, Sri Lanka. We now provide an update, describing the challenges of attempting to adapt a mutually collaborative model to engage in this North-South partnership. While the equal distribution of benefits was an important outcome attempted through this model, the dynamics of this partnership was constrained by human resource availability, local relevance and buy-in. Exploring these challenges further can provide important insight into understanding how to circumvent future challenges while still leveraging a valuable collaborative model.

Keywords: dementia, aging, chronic disease, partnership, Presentation Preference: Oral

Menstrual cycle-A Determinant of Life style Disease in Young Urban Women of North India.

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Objective: The study aims to examine the association between different body composition measures, menstrual cycle characteristics, reproductive health and hormonal factors in a population-based sample of young urban women.

Study Design: A cross-sectional study

Sample Population: The study sample included 516 North Indian women from Urban Delhi (India), aged 22–34 years who were not currently taking hormonal contraceptives and were not in ante- or postnatal care, lactating or breast feeding.

Methodology: Anthropometric measures included BMI, waist circumference (WC), Body Fat percentage (BF%) and derived parameters were waist–hip ratio (WHR), Waist-Height Ratio (WHR). Reproductive Health parameters and Menstrual cycle characteristics were self-reported and scored on the basis of a questionnaire. Menstrual cycle was defined as short (≤25 days), normal (26–34 days), or long (≥35 days). Cycles were defined as irregular if there were ≥15 days between the longest and shortest cycle in the past 12 months. Fasting serum levels of testosterone, and insulin were reported by 212 women and the free androgen index (FAI) derived.

Results: An irregular cycle had at least two-fold greater association with markers of lifestyle disease, whether defined by BMI (odds ratio (OR) = 1.56; 95% CI = 1.38–4.15), WC (OR = 2.81; 95% CI = 1.48–5.12), WHR (OR = 2.72; 95% CI =1.91–3.98), WHtR (OR = 2.02; 95% CI =1.17–4.14), and Body Fat% (OR = 1.98; 95% CI =1.32–4.46). The body composition measures were significantly associated with high serum levels, and these serums seem to influence associations between reproductive health and body composition measures.

Conclusion: An irregular menstrual cycle is significantly associated with both overall and central obesity and glucose levels. This association was substantially influenced by hormonal factors, particularly insulin. These women with higher sugar levels, weight and fat content are definitely at a risk of developing a life style disease.

Abbreviations: Waist circumference (WC), Body Fat percentage (BF%), Waist–Hip ratio (WHR), Waist-Height Ratio (WHtR), free androgen index (FAI)

Keywords: Menstrual Irregularity, Urban women, Delhi, body composition measures, life style diseases.
How feasible is it to include HIV screening in to the existing antenatal syphilis screening system in Sri Lanka?

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Abstract
Background: Prevention of mother to child transmission(PMTCT) of HIV infection is a well identified strategy in maintaining the current low prevalence of HIV in Sri Lanka. As only 50% of mothers were tested through government clinics for syphilis in 2012, in order to integrate HIV screening to the existing system, the factors which could have an impact should be studied.

Methodology: A cross sectional study was carried out among medical officers and public health nursing sisters in 15 Medical Officer of Health (MOH) areas in the District of Gampaha, using a self administered questionnaire. Data was extracted from the consolidated H509 form from all MOH areas from year 2009-2012.

Results: The coverage of antenatal syphilis screening by the government field clinics in the Gampaha District increased from 3.35% in 2009 to 33% in 2012. Main difficulties identified in carrying out VDRL testing were inadequate equipment(39%), unavailability of transport(38%) and lack of skilled persons to draw blood(34%). 52% anticipated increase in work load by introducing HIV test while 46% anticipated confidentiality issues. Main advantages identified were PMTCT of HIV(73%), prevention of sexual transmission(30%) and ensuring the workplace safety(39%).

Conclusions: Almost 1/3 of syphilis screening among pregnant women was done by the MOHs in Gampaha District in 2012. Though there are some factors to overcome, many identified it as necessary. A national strategy should be planned with MOH to reach this target.

Key words: HIV screening, Antenatal, VDRL
Effectiveness of an intervention that addresses lack of knowledge on reproductive health issues which leads to teenage pregnancies among teenage school girls in a rural village in Anuradhapura district

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Pregnancy occurring in a young woman who has not reached her 20th birthday is considered as a teenage pregnancy in Sri Lanka. Lack of knowledge on reproductive health issues was identified as a determinant of teenage pregnancies. Objective of the study is to evaluate the effectiveness of the intervention that addresses lack of knowledge on reproductive health issues among teenage school girls in a rural village in Anuradhapura district. A quasi-experimental study was conducted among girls of grades 8-11 in two selected schools in Nochchiyagama and Rambewa Medical Officer of Health (MOH) areas, randomly allocated as the intervention group (n=42) and control group (n=32). An intervention was implemented in the intervention area to address the determinant over four months. Knowledge was improved by interactive discussions, power point presentations and leaflets. Self-administered questionnaire was used before and after the intervention to assess the effectiveness. Significance of the improvement was assessed using paired t test and independent sample t test. A significant improvement in the overall knowledge was seen in both the intervention and control groups (p<0.05). However, the improvement was much higher in the intervention group compared to control group. The study can conclude that intervention implemented among teenage school girls in a rural setting was effective in improving their knowledge.

Key words: Knowledge, Determinant, Teenage Pregnancy
Epidemiological Evaluation of Injury in a Rural VDC of Eastern Nepal

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Background
Injury is one of the major public health problems because of its prevalence in every corner of the world and preventable nature of it. It affects all the age group and ranges from minor injury like cut/bruises to catastrophic death effecting thousands of lives.

Objectives:
To find the prevalence of injury and various epidemiological factors related with injury

Methods and Materials:
A cross sectional study was conducted in Chandbela VDC. Total of 1277 houses (7034 Persons) were interviewed during community diagnosis program. A pre tested questionnaire was used to collect the data regarding socio-demographic profile of the house and information related to injuries in the family. Data was entered in excel and analysis was done with spss 17.0

Result:
The prevalence of injury within last 6 months was 1.83 % (129) with permanent disability among 5 persons. Two people died due to injury within last one year. The injury was more prevalent among age group 30-44 years. Male (66.6%) were mostly affected with ratio of 2:1. Fall (38.75 %) was the most common causative mechanism of injury. Regarding the place of injury, home (31%) then road (29.02%) was common places. Most common nature of physical injury was Cut/Bite (25.58%).

Conclusion:
The minor injuries like cut and bruises were common at rural community level affecting mostly productive age group 15-45 years of life.

Keywords: Injury, prevalence, cut
A Household Survey on Awareness of HIV/AIDS among Rural People of Chandbela VDC of Eastern Nepal

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Background: In the past 20 years HIV/AIDS has become an increasing global phenomenon. In Nepal as the epidemic is maturing However, the epidemic has never been maintained in the general population through heterosexual transmission in Nepal, rather it is driven by the infections among higher risk populations and their sexual partners.

Objectives: To assess the knowledge about HIV/AIDS among household level

Material and Methods: A household based survey was conducted in all the nine wards of Chadbela VDC. Interview was conducted using pre-tested semi-structured questionnaire which included socio-demographic profile and characteristics to assess awareness on HIV/AIDS. The data was analyzed to calculate percentages and proportions.

Results: Out of 1274 households, 946(74.25%) households were below poverty line, where 19.34% of people did agriculture for living and 3.3% were migrant worker. Most of the people (73.2%) were aware and had heard about HIV/AIDS mainly through radio and their friends, however 16.8% of the people never heard of HIV/AIDS. Of the total population 61.6% of the people believed that even a healthy looking person can have HIV/AIDS. Attitude towards HIV/AIDS patients, majority of population (55.93%) was to avoid any kind of relation or contact with patient.

Conclusion: Although majority of the population were aware of and had heard about HIV/AIDS, the attitude towards the patient was not positive.

Mode of Presentation: Poster

Key words- HIV/AIDS, Awareness

Predictor and Classification of Resilience of Saudi Families with Chronically Ill Children

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Children are their parents pride and joy. Parents have hopes, dreams and expectations for their children to grow and develop in a holistic healthy manner physically, emotionally, and socially. It is an extremely vulnerable situation when the life and health of these children are threatened. Hence, when a child is diagnosed with a chronic condition, parents grieve for the loss of their child’s health, their expectations and dreams can be challenged, and their sense of protection, feeling of invulnerability are severely shaken. Some parents are more likely to succumb to numerous disorders such as anxiety and depression; however, some parents do not experience adverse outcomes, and lead a pleasant healthy life. Psychologists have labeled those who have the capacity to cope with stress and maintain their equilibrium, and adapt in the face of adversity as being resilient. This study focused on the resilience displayed by Saudi family members when faced with the burden of a child’s chronic illness. The study used a convenience sample of 122 Saudi parents of chronically ill children in three selected public hospitals in Jeddah region, Saudi Arabia. A method of operationalizing resilience was developed based on principles of full classification model by examining stress and adversity and quality of life (QOL). The results indicated that participants group with Low Stress and Low QOL and the group with High Stress and Low QOL are the groups that require urgent care and help.
Keywords: chronically ill children, resilience, QOL
A Study of Knowledge, Attitude and Practices regarding Bird flu in Eastern Region of Nepal

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Abstracts

Background: Avian influenza is currently a great threat to global health. The first outbreak in Nepal was officially recorded in January 2009 in Eastern part. Objectives: To study the Knowledge, Attitude and Practice regarding Bird flu among Poultry Farmers, Meat handlers and Consumers. Materials and Methods: This was the Descriptive cross sectional study done in VDC of Dhankuta and Jhapa districts of Eastern Nepal. Convenience sampling method was used. A tool for Data collection was semi-structured questionnaire. Interview technique was used as data collection tools. Results: Total sample size was about 600. Out of 600 respondents 87% were consumers, 2.5% were meat handlers and 10% were poultry framers. Most of the study population belongs to 30-39 years group. Majority were Dalit by ethnicity. Almost all of the study population knew about bird flu, sources of information were TV and radio. Government and Poultry framers should jointly take care for control of the epidemic. About 34% of the study population expressed that they will not consume chicken meat during epidemic. About 36% who raise poultry does not use any protective measures when handling poultry. Conclusion: Among the Target population, Most of them heard about Avian Flu. TV and radio were most source of information. People, who raise poultry, didn’t use any protective methods when handling poultry in their farm and houses.

Key words: Eastern Nepal, Bird flu, Poultry

The anterior transverse ligament of the knee: morphological and morphometric study in formalin fixed fetuses

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Abstract

Purpose: The objective was to study the morphology and morphometry of transverse ligament of the knee in south Indian population.

Materials and methods: The present study included 106 knee joints of the formalin fixed fetuses which were obtained from the anatomy department. The fetuses which had musculoskeletal anomalies were excluded from the present study. A vernier caliper of 0.02 mm accuracy was used to perform the measurements.

Results: In the present study, transverse ligament of the knee was found in 87.7% of the cases. It was observed bilaterally in 81.1% of cases. The duplicated ligaments were not observed in our specimens. The mean length of the ligament measured 3.7 ± 1.5 mms. There was no significant difference between left and right knees or gender in regard to its length (Student's t test; p > 0.05).

Conclusion: The morphological and morphometric data related to the transverse ligament of the knee in fetuses have not been reported. The present study has provided additional information on the morphology and morphometry of the transverse ligament in fetuses. We believe that our study will provide support to the fetal anatomy, concerning surgical procedures and arthroscopy of the knee joint. This study is enlightening not only for orthopedic surgeons, but also for morphologists and embryologists.

Keywords: knee joint; morphometry; transverse ligament;
A survey of ethical procurement practice in the National Health Service

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There is growing evidence that medical and surgical supplies used in the West are produced in unsatisfactory working conditions in less economically developed countries. These include hazardous working environments, poor remuneration and child labour. In response, The Medical Fair and Ethical Trade Group released an ‘Ethical Procurement for Health’ workbook detailing ways in which healthcare procurement departments can take steps to ensure workers’ rights are protected.

Between 2012 – 2013 a survey was undertaken to assess whether procurement departments in the UK had adopted an ethical procurement policy. An anonymised survey was sent to sixty randomly selected procurement managers in acute hospitals (29% of acute hospitals in England, N. Ireland and Wales). The survey was conducted via telephone or via an online survey. The response rate was 33%.

The results indicate that the majority of procurement departments did have an ethical procurement policy (65%), however in what detail this was observed and practised was unclear. Results also show that reported barriers to the implementation of an ethical procurement policy include cost (47%), human resources (31%) and the reliance on external bodies (21%).

In order to have meaningful impact on human rights abuses the ethical procurement for health guidelines must be broadly adopted and implemented and the barriers to implementation which we have identified need to be further addressed.

Keywords: Ethical Procurement, Child Labour, Ethical Trade

Morphometric Parameters of the Indian Human Adult Kidney: An Anatomical Study

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Abstract

Introduction: Information of the renal morphometry is helpful for the diagnostic, therapeutic and surgical decisions.
Objective: The purpose of this study was to determine the anatomical parameters of the Indian adult kidney.
Materials and method: The renal length, width and thickness at superior and inferior poles were measured in 151 adult cadaver kidneys with a digital vernier caliper.
Results: The mean renal length was 8.9 ± 0.9 cm on the right side and 9.1 ± 0.9 cm on the left side. The mean width of the superior pole of the right kidney was 4.9 ± 0.6 cm and the left kidney was 5 ± 0.7 cm. The width of inferior pole of the right and left kidneys were 4.8 ± 0.6 cm and 4.5 ± 0.7 cm respectively. The mean thickness of the superior pole of the right kidney was 3 ± 0.4 cm and left kidney was 3.2 ± 0.5 cm. The mean thickness of the inferior pole of the right and left kidneys were 3.1 ± 0.4 cm and 3.2 ± 0.5 cm respectively.
Conclusion: The data from the study showed the difference of the right and left side kidney in width at superior pole (p = 0.61) and at inferior pole (p = 0.01) and in thickness at superior pole (p = 0.00) and at inferior pole (p = 0.19). This data can be used by surgeons and radiologists.
Keywords: Kidney, Length, Morphometry
The effect of all-terrain wheelchairs on mobility, health outcomes, and quality of life among people living in rural Laos

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Abstract

Nearly 1,300 people in Laos are in need of wheelchairs each year with over 60% of these individuals living in rural areas of the country (Sheldon, 2011). Poor infrastructure and rugged environmental conditions throughout rural Laos create challenges in mobility for wheelchair users. Wheelchair designs currently distributed in Laos are insufficient to overcome existing obstacles resulting in social isolation and inactivity among wheelchair users. The purpose of this research project is to determine how alternative wheelchair designs impact mobility, health outcomes, and quality of life among individuals living in rural Laos. The Leverage Freedom Chair (LFC) (Winter, 2011), manufactured by Global Research Innovation and Technology (GRIT), is an alternative wheelchair design that enables users to generate more mechanical power, which aids in overcoming mobility obstacles seen in rural areas (i.e., dirt roads). While the mechanical benefit of the LFC is well documented, the effect on user health is unknown. The project will distribute LFCs to individuals who currently use locally manufactured wheelchairs and live in the XiengKhouang province, a rural province with a high percentage of wheelchair users. Changes in mobility, physical health, and quality of life, will be measured before and after LFC use to determine the effect of this alternative wheelchair design. Implications from this research project will help clinicians and wheelchair manufacturers understand how alternative wheelchair designs impact those living in developing countries.

Keywords: disability, wheelchair, developing countries

Quantitative fraction of dermal collagen and elastic fibres in sections taken perpendicular to each other from head and neck region – a histological study

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Abstract

Dermal collagen and elastic fibres play a key role in wound healing. It is therefore, their influence in the formation and behaviour of scars cannot be ignored particularly, when they exhibit asymmetrical distribution in different regions of the body. Our aim is to establish such variability in the region of head and neck as this region is cosmetically important in the point of view of aesthetic procedures. We have analysed quantitative fraction of dermal collagen and elastic fibres from 200 skin samples (100 each from 2 directions) obtained from 5 areas from head and neck regions of 20 cadavers. All the samples were processed for the Verhoeff’s-vanGieson stain. Image analysis was done using tissue-quant software. There was a significant differences of quantitative fractions of collagen and elastic fibres between horizontal and vertical direction in areas of scalp and forehead (p<0.01). But, the submandibular area and neck showed statistically significant difference in elastic tissue only (p <0.01). However, in lateral canthal area the difference in collagen and elastic tissue was statistically insignificant. Asymmetrical distribution of dermal collagen and elastic fibres in 2 directions of the sections in the same region possible have an effect on wound healing process which in turn influences the appearance and behaviour of scar depending upon the region and direction of the wound.

Keywords: collagen, elastic, quantitative fraction
Determinants of Clients’ Adherence to Public – Private Mix Dots (ppmd) Treatment

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Abstract
This study determined the predictors of clients’ adherence to PPMD treatment. Grounded on Pender’s Health Promotion Model, the study employed a descriptive correlational research. Anti-Tuberculosis Chemotherapy Adherence Index derived the data and was processed using Statistical Package for Social Sciences (SPSS) version 16. A discriminant analysis was conducted to predict adherence with age, educational attainment, income, sputum smear status, accessibility, co-morbidity, perceived self-efficacy, quality of health services, perceived social support, perceived social stigma, motivation, side-effects and adverse reactions to treatment as the variables. Significant mean differences were observed among quality of health services (p=0.007), income (p=0.030) and perceived social stigma (p=0.032). The discriminate function revealed a significant association between groups and all predictors, accounting for 71.4% of between group variability, although closer analysis of the structure matrix revealed only three significant predictors, namely quality of health services (0.476) directly influences while income (-0.381) and perceived social stigma (-0.376) both inversely influence adherence. Income and perceived social stigma are good screening parameters in assessing clients’ adherence. Quality of health services should be considered when providing treatment since it is a good determinant of clients’ likelihood of treatment adherence. Hence, National TB program managers need to develop an evaluation tool for provision of health services; frequent counseling and assistance be provided pro-actively. Future researchers may conduct studies in a larger population with other co-founding variables.

Keywords: Tuberculosis, DOTS, Adherence

Home Education Impact on Peritoneal Dialysis-Associated Peritonitis Rates in Al Medina-KSA.

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Abstract
Background: Peritoneal dialysis (PD) -associated peritonitis remains the leading cause of technique failure and a significant cause of morbidity and mortality among PD patients.
Objective: the present study was to evaluate home education on peritonitis incidence rate among patients' in PD in Al-medina- KSA.
Methods: Thirty patients' on home PD were identified during their follow up visits to three dialysis units. Data collected through four structured interviews at their home by the following three tools; I- Sociodemographic data, II- pre-posttests questionnaire for knowledge, III-observational checklist of home PD practice. Sequences of data collection were pretest, posttest1 after education, posttest2 after 6 months from the posttest1. Cultures for indications of peritonitis were done pre education, 3 and 6 months after posttest1.
Results: the study findings revealed 73.3% of the subjects were males and the mean age was 26 year. A highly significance differences were found among pre and posttest1 of knowledge \( t (27.892) P< (0.001) \), pretest-posttest1 observational checklist of PD practice and posttest1-posttest2, \( t (8.475) P< (0.001) \) and \( t (4.805) P<(0.001) \) respectively. The cultures results were showed peritonitis incidence as followed (30%, 10% and 13.3%) at the time of pretest education, 3 and 6 months after posttest1 respectively.
Conclusions: Positive impact on minimizing incidence of peritonitis in PD following home education was showed. By time the patients lacking their precautions was observed, thus periodical refreshment education may be critically needed to confirm proper practice.

Keywords: home education, PD-Associated Peritonitis rate

Addressing Non-Communicable Diseases in Malaysia: An Integrative Process of Systems and Community

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Introduction
NCDP-1M (Non-Communicable Disease Prevention – 1 Malaysia) was launched in October 2010 with approximately 200 projects throughout the country. These projects were supported by a dedicated fund allocated by the ministry. Financially, a program budget of RM4 million annually was approved.

Methodology
The Ministry of Health published a series of NCD Community-based Intervention Training Modules which address six disease risk factors. The Modules are designed for use by non-health professionals; ie volunteers from the community. Where an individual meets the criteria for NCD risk, according to the factors measured, they are invited to participate in a semi-structured intervention programme designed by the Volunteers, with the technical support from Ministry staff. Intervention activities are integrated into the community activities and culture. Data from each district is collected through online templates.

Result
By 31 December 2013, more than 32,000 clients had been supported at 496 NCDP-1M project sites. Out of 15079 clients had theirs BMI recorded and agreed to follow the intervention programs. As for BMI, 26% of them had shown decrease in weight with the average weight loss of 3.7 kg. For blood glucose, out of 7144 clients, 32% had shown decrease in blood glucose and for blood pressure, of 3239 clients, 10% had shown decrease in blood glucose

Conclusion
Finally, the program relies predominantly on access to and opportunities for people visiting the health services. As a preventive and health promotion strategy, therefore, it does not reach those who may not have a need to or who for various reasons, do not have access to health services.

Keywords: NCDP-1M (Non-Communicable Disease Prevention – 1 Malaysia)
Inequitable Access in Rural Central India: Evolution of a Holistic Health Assurance Programme

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Abstract
Universal Health Cover (UHC) rests on the belief that access should be based on individual need, without forcing the user to spend money one does not have or preventing access because of inability to pay. The Jowar Health Assurance Programme (JHA) was introduced in 1980 in villages of Wardha district to address the huge gap in access to healthcare services between those who could afford and those in chronic poverty. Three decades hence, JHA serves as a model for holistic delivery of UHC to rural poor. Key features include direct participation by end user, buy-in by the district’s largest not-for-profit provider hospital (MGIMS), three way engagement between provider, end user, participating villages. Majority expenses are covered by MGIMS which provides a comprehensive package of preventive, promotive, curative services. Participating villages contribute 10% as co-payment derived from sale of Jowar (Sorghum) and co-payments during hospitalisation. Individual contribution towards JHA is collected in kind (Jowar) during annual harvest. Each family contributes according to capacity (size of individual cultivable landholding), economic ability though service access is need based. Collected harvest is sold to generate a village fund which in turn contributes towards village based primary care and free hospital based secondary care for unforeseen illnesses.

Keywords: Health inequity, Indian agrarian population, Universal Health Coverage, Health Assurance

The assessment of parenting in among parents of 10 year old school going adolescents in Jaffna district and evaluation of the intervention using parental education package

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Background
Parenting it is defined as the rearing of a child or children especially the care, love and guidance given by parent. The main dimensions of parenting identified by the WHO (World Health Organisation) are Connection – love, control, respect for individuality, modeling for appropriate behavior and provision and protection.

Aims
The aim of the study is to describe the patterns of the selected dimensions of ‘parenting’ of adolescents and associated factors.

Methods
1925 parents by cluster sampling in school were included in the study. An interviewer administered questionnaire developed by the author was used for data collection after pre testing in Kilinochchi district. The intervention package was designed by the PI and implemented and re assessed after 3 months for effectiveness. The data was analyzed using SPSS 20 with descriptive statistics using statistical tests.

Results and conclusions
The protection and care was satisfactory among 90 % of parents. Around 76% of parents discuss the family matters, day to day activities, the issues related to their age and about the cultural values with the children. Only 15.6% of parents spend a quality time every day. The control of the parents was associated significantly with the educational level of the parents where parents with low educational level (less than A/L) were associated with more control according the perception of children. The intervention showed improvement in the quality time spent by the parents.
Introduction
The Estate Sector functions as a major foreign exchange earner for Sri Lanka comprising of a population of over a million with 400,000 workers out of which 95% are in the labour force. The Hunnasgiriya Estate with extent of 3.75 km² and population of 1700 is situated 33 km from the Kandy town and 25 km from the Matale town.

Objectives:
Upgrading the quality of life of the estate population by improving health services by studying the socio-demographic characteristics, economic status, health status and health related habits of the population.

Methods
There were 509 households in Hunnasgiriya Estate and all of them were included in the survey. An interviewer administered questionnaire was used for data collection after pre testing in an estate in Kandy district.

Results and conclusions
Majority were Tamils (97%) and females (52.6%). Children less than 19 years of age consisted of 31.5% of the population and 5.8% were above 65 years. Only 25.9% have progressed above grade 9.
Majority (54.4%) of the population lived in ‘Line’ houses but almost all had a water sealed latrine (99.6%) and pipe borne water (99.6%).
Most prevalent unhealthy habits were alcohol use (25.9%) and betel chewing (23%) while tobacco use was low (2.1%).

Keywords: estate health, living condition, health related habits