

Original Research



Knowledge, practices and associated factors of knowledge on Preconception Care Package among public health midwives in Colombo District, Sri Lanka

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DOI: <https://doi.org/10.4038/jccpsl.v30i3.8665>

Received on 20 Nov 2023

Accepted on 18 Jul 2024

Abstract

Introduction: Preconception care (PCC) is of paramount importance in reducing maternal and child morbidity and mortality. A new programme called 'Package of interventions for PCC' was introduced in 2012 in Sri Lanka to be delivered through the existing public health system.

Objectives: To assess the knowledge, practices and associated factors for knowledge in public health midwives (PHM) on implementing the PCC package in Colombo District

Methods: A descriptive cross-sectional study was carried out using a pretested self-administered questionnaire among all PHMs in Colombo District (N=366). Knowledge and practices were assessed through self-reporting by PHMs. This was complemented with a checklist to assess practices in four randomly selected medical officer of health (MOH) areas. Data were described using mean values and frequency. Chi-squared test was used to determine the associations ($p < 0.05$).

Results: Response rate was 97.3%. Overall knowledge of PHMs on the PCC package was high (mean total mark=89.7 (SD=9.1) and median=92 (IQR=88-96)). However, knowledge on some specific components was significantly low. Knowledge level was significantly associated with the age of PHMs ($p < 0.05$), marital status ($p < 0.05$), service experience ($p < 0.05$), service experience as a field PHM ($p < 0.05$) and time taken to travel for work ($p < 0.05$). The majority of PHMs ($n=349$; 95.4%) conduct PCC clinics. However, only 79.8% ($n=292$) conduct health education sessions. Only three (5.8%) PHMs had evaluated the screening tool before directing the couples to the MOH. Nutritional assessment was done in all clinics (100%), but laboratory investigations were not done at any of the clinics, nor the couples were given information booklet.

Conclusions & Recommendations: Although overall knowledge was high, knowledge on some aspects was not adequate. Most of the practices were poor and not in par with their high knowledge levels. No uniformity was seen in the practices and procedures carried out, indicating a lack of proper guidance and deficiencies in training. Therefore, it is recommended to revise the national guidelines and the circular on PCC package and conduct refresher training on its implementation.

Keywords: preconception care, public health midwife, knowledge, practices

Introduction

Although preconception care (PCC) is still evolving in the world, the concept had been known for a long time. In ancient history, women were advised to increase their wellness and also to avoid hazardous substances before they become pregnant. Plutarch wrote that the ancient Spartans: "...ordered the maidens to exercise themselves with wrestling, running, throwing the quoit and casting the dart, to the end that the fruit they conceived might, in strong and healthy bodies, take firmer root and find better growth" (1). The following passage appears in the Old Testament, "...and the angel of the Lord appeared unto the woman, and said unto her, 'Behold now thou art barren, and barest not: but thou shalt conceive and bear a son. Now, therefore beware, I pray thee, and drink not wine and strong drink, and eat not any unclean thing' " (2).

Preconception care is defined as 'the provision of biomedical, behavioural and social health interventions to women and couples before conception occurs'. It aims at improving the health status of women and couples and reducing individual and environmental risk factors that contribute to the poor maternal and child health (MCH) outcomes (3). Many developed and developing countries have recognized the importance of PCC in view of MCH promotion and optimizing the pregnancy outcomes. The concept of PCC is widely recognized in many international conventions. The Declaration of Alma-Ata in September 1978 has outlined the paramount importance of MCH and family planning, which are the core components of PCC (4).

The Ministry of Health, Sri Lanka has launched the PCC Package in 2012, focussed on newly married couples with the objective of improving reproductive health outcomes by improving the health of newly married couples and extending the maternal health continuum further before pregnancy occurs (3). The PCC package is delivered through the existing public health system and uses several tools as delivery channels, including the invitation card for the newly

married couples, the screening tool/checklist, guide for healthcare workers booklet and the information book for couples.

The main implementor of PCC Package is the MOH team where the most important grass root level service provider is PHM. As PHMs are the cornerstone of this programme, its successful implementation depends on their knowledge and practices. Therefore, the objective of the current study was to assess knowledge and practices of PHMs on PCC package and to determine the factors associated with their knowledge in the Colombo District, Sri Lanka. The findings of this study will help in updating and revising strategies and guidelines on the PCC package and to strengthen and streamline the PCC services throughout the country. The results of this study can also be used by other countries and agencies which are implementing similar programmes.

Methods

A descriptive cross-sectional study was carried out among PHMs in Colombo District, Sri Lanka. In this district, the Colombo Regional Director of Health Services (RDHS) area has 441 PHM areas and Colombo Municipal Council (CMC) region has 89 PHM areas (5).

The sample size (n) was calculated using the formula: $z^2(pq)/d^2$ (6), which was 403 PHMs. As 143 PHM areas were vacant at the time of data collection and 11 PHMs who were on leave for more than one month were excluded, only 376 PHMs from Colombo District were available for the study. A pretested self-administered questionnaire was used to assess the knowledge as well as some of the practices of PHMs. As some of the practices could not be assessed at individual level, clinic-based practices were assessed. For this purpose, four MOH areas were selected randomly from which four PCC clinics and four PCC sessions each conducted in a particular month, were assessed using a checklist.

This checklist was based on 28 practices recommended in the PCC package implementation guidelines. It also included the practices on conducting health education sessions.

Data analysis

Data analysis was done using the Statistical Package for the Social Sciences (SPSS) Software version 23. Qualitative data were described using frequency distribution and percentages and the quantitative data using mean values and frequency distributions. Total marks obtained for knowledge on PCC was 100. Considering its skewed distribution, median value (92 marks) was taken as the cutoff. Accordingly, PHMs with a score ≥ 92 were considered as having ‘satisfactory’ knowledge and all others as having ‘unsatisfactory’ knowledge. Appropriate cross tabulations were done where necessary. Chi-squared test was used to assess associations ($p < 0.05$).

Results

The response rate was 97.3% (366/376). The mean age of PHMs was 40.9 years ($SD = 10.94$). Majority of the PHMs were Sinhalese ($n = 365$; 99.7%), Buddhist (98.4%) and married (86.1%). Years completed as a field PHM ranged from 1 month to 37 years (mean = 12.9 years). Approximately one third ($n = 126$) had work experience of 1-5 years while another one third ($n = 113$) for 16-25 years and 10.4% for more than 25 years. Most of them have not received an award/ performance appraisal during their service (62.3%); Majority were serving a population of 3001-5000 (53.8%); and residing outside their PHM area (86.1%). Most of the PHMs (59%) have not received any training on PCC package within last 5 years and not read the ‘Guide to health care workers’ booklet (81.4%).

Distribution of the total marks obtained for knowledge on PCC was skewed (skewness of -3.02 and a kurtosis of 13.2). After excluding one extreme outlier, the mean mark obtained was 89.7 ($SD = 9.1$) with a median of 92 (IQR 88-96) (Table 1). The

mean marks obtained for each component and the specific areas are also summarized in the table.

Satisfactory level of knowledge among PHMs was significantly associated with younger age less than 50 years, being married, taking more than an hour to travel for work and overall and service experience of ≤ 0 years ($p < 0.05$). It was not significantly associated with the number of children ($p = 0.125$), husband working in health sector ($p = 0.3$), receiving an award/performance appraisal ($p = 0.99$), population of PHM area ($p = 0.33$), extent of PHM area ($p = 0.05$), covering up another PHM area ($p = 0.07$), training received on PCC package ($p = 0.16$) and ever read the ‘Guide to health care workers’ booklet ($p = 0.05$).

With regards to practices on PCC, 349 (95.4%) stated that they are conducting PCC clinics. Out of them, 76.5% stated that they conduct one clinic per month; 36.7% that 1-5 couples attend per clinic; 79.8% that they conduct PCC sessions (health education sessions); and 22.9% that they conduct one session per month. Majority have not provided information on PCC sessions (63.4%) and not given information on the number of couples attending (67.8%).

Based on the 52 screening tools given to the couples who attended the clinics, only 29 (55.8%) couples have been given the screening tool by PHM at the field and out of them, only 3 (5.8%) screening tools have been assessed by PHM before coming to the clinic. No PHM has assessed the screening tool at the clinic for its completeness nor identified problems/issues before directing the couples to the MOH. The basic information including family history of selected medical conditions have been completed in all 52 screening tools. Selected past and present medical conditions, medications, risk factors and the family nutrition column has been completed by 51 (98.1%) while the lifestyle risk factors have been completed in 49 (94.2%). Sexual and reproductive health risk factors were completed only in 48 (92.3%) and the risk conditions at the house and workplace, supervised only in 47 (90.4%).

Table 1: Frequency distribution of the knowledge of PHMs on PCC Package

Statement	Correct answer	No.	%
Assessing the knowledge on objectives of the PCC package			
Mean marks obtained: 88.2 (SD=18.2)			
• To reduce complications during pregnancy and delivery and prevent the risk on mother and baby to prevent or minimize maternal and infant mortality	True	244	66.8
• To encourage women to get pregnant soon after the marriage	False	324	88.8
Assessing the knowledge on steps of PCC programme			
Mean marks obtained: 91.4 (SD=13.2)			
• Regarding newly married couples in your PHM area, marriage registrar should give the 'Invitation card' to the couples at the time of registering their marriage for them to meet the PHM of the area	True	299	81.9
• After registering newly married couples in the eligible family register, filled checklist should not be evaluated by PHM to identify the problems/ issues until they attend the preconception care sessions	False	245	67.1
Assessing the knowledge on screening tool for the couples			
Mean marks obtained: 82.7 (SD=22.6)			
• There is no separate column to be filled by the PHM about the problems or issues identified by her	False	240	65.8
• It does not give any details regarding the family nutrition	False	264	72.3
Assessing the knowledge on process to be carried out at the PCC clinics			
Mean marks obtained: 93.5 (SD=13.5)			
• Breast examination of the female should not be done at the preconception care clinic	False	287	78.6
Assessing the knowledge on sessions carried out at the PCC clinics			
Mean marks obtained: 84.3 (SD=13.0)			
• Regarding the health education sessions at preconception care clinic, it should be done by all the Public Health staff including PHM, PHI, SPHM, PHNS and MOH	True	280	76.5
• The topic on sexuality and sexually transmitted diseases should only be done by MOH/AMOH	False	50	13.7
• Females should be educated on self-breast examination and its importance	True	328	89.6
• After the couple attends the sessions, they should be provided with a reader friendly booklet called ' <i>Sonduru kedallakata suwahasak subapathum</i> ' for them to read at home	True	320	87.4
Assessing the knowledge on Preconception			
Mean marks obtained = 93.3 (SD=12.9)			
• In a woman who has a menstrual cycle of 26-32days, the fertility period is considered as between 1 st day and the 10 th day of the menstrual cycle	False	295	80.6
Overall level of knowledge			
Very good knowledge (≥ 96)		98	26.8
Good knowledge (92-95)		115	31.5
Below good knowledge (<92)		152	41.6

Table 2: Frequency distribution to assess practices of PHMs at the PCC care clinics

Characteristics	No.	%
Weight of the female partner has been measured	52	100.0
Height of the female partner has been measured	52	100.0
BMI of the female partner has been calculated	52	100.0
Weight of the male partner has been measured	52	100.0
Height of the male partner has been measured	52	100.0
BMI of the male partner has been calculated	52	100.0
Blood grouping and Rh of the female partner		
• PHM has not asked to do from outside and the couple hasn't done	14	26.9
• PHM has asked to do from outside and the couple has done	15	28.8
• PHM has asked to do from outside and the couple has not done	23	44.2
Blood grouping and Rh of the male partner		
• PHM has not asked to do from outside and the couple hasn't done	14	26.9
• PHM has asked to do from outside and the couple has done	13	25.0
• PHM has asked to do from outside and the couple has not done	25	48.1
Hb of the female partner		
• PHM has not asked to do from outside and the couple hasn't done	14	26.9
• PHM has asked to do from outside and the couple has done	10	19.2
• PHM has asked to do from outside and the couple has not done	28	53.8
Hb of the male partner		
• PHM has not asked to do from outside and the couple hasn't done	14	26.9
• PHM has asked to do from outside and the couple has done	8	15.4
• PHM has asked to do from outside and the couple has not done	30	57.7
PHM has mentioned the identified problems/ issues in the relevant column	3	5.8
PHM has note down the dates and times of the sessions conducted by the MOH office/ clinic in the checklist	11	21.2
The breast examination of the female partner has been done	48	92.3
Counsel the couples who need family planning (FP) giving information on family planning methods and provide them with family planning methods		
• FP needed by the couple, but not being addressed at the clinic	8	15.4
• FP needed by the couple, and has been addressed at the clinic	24	46.2
• FP not needed by the couple as they expect babies	20	38.5
The checklist of the couple directed to the MOH for necessary evaluation	52	100.0
After the couple attends the session, they are provided with the booklet 'Soduru kedellakata suwahasak subapathum' for them to read at home	0	0.0

The practices of PHMs at the PCC care clinics is described in Table 2. PHM has mentioned the identified problems/ issues in the relevant column in only 3 (5.8%) couples. The breast examination of the female partner was done at the clinic in 48 (92.3%) of women. The checklists of the couples were directed to the MOH for necessary evaluation in all 52 (100%) couples. After the couples attended the clinic, none of the couples were provided with the

information booklet called 'Soduru kedellakata suwahasak subapathum'.

PCC sessions were also assessed with regard to the topics done to provide knowledge and create awareness. The topics including good marital relationship and wellbeing of the family, Benefits of non-violence and male participation and parenthood was done only at one session (25%). Couples were

not educated on PCC package at any of the sessions.

Discussion

In the continuum of care that spans throughout the life cycle, preconception period is of utmost importance. Preconception period provides a platform not only to ensure and promote MCH but also to improve and promote the health of adolescents, men and women regardless of their intention of being pregnant (7).

In the study population, majority of PHMs (73.8%) were within 20-49 years of age and 4.4% above 60 years, indicating a comparatively older study population compared to a study done by Gunathunga and Fernando (1997), in which the majority (70.5%) were between 30-49 years (8). In the same study, the majority (96.9%) had GCE O/Level as the highest educational qualification, whereas in the present study, 43.4% had a degree/ diploma indicating comparatively a more educated study population (7). Mean population per PHM area was 4805 (SD=1461) with 94.2% having a population more than 3000, though the recommended population per PHM area by the Ministry of health was ≤ 3000 (9). Nearly one third of the PHMs coverup duty of another area and more than half of the PHMM has to travel for >1 hour to reach their working station. All these factors can lead to higher workload and less motivation of the PHMs.

Although there were no studies on the knowledge of PHMs on preconception care, a study done to assess the level of awareness and perception of preconception care among 280 health care workers in 2013 in Nigeria revealed that only 23% had more than 75% of knowledge on the components of preconception care (10). In contrast, the present study revealed a high overall knowledge of the PHM on PCC package with a positively skewed distribution. However, only two thirds have identified the most valued objectives of the programme warranting a need for a well-organized

training for all PHMM.

Screening tool for the couple is the main tool of the programme which maintains the continuum of care from self-evaluation to evaluation by PHM and MOH. However, nearly 35% of PHMs did not know that the filled checklist should be evaluated to identify the problems/ issues. This was also reflected in the practices, where PHMs had filled the column allocated for their comments in only three (5.8%) screening tools.

Knowledge on the topics addressed during the PCC sessions was relatively high as more than 95% had known all the topics correctly. However, their knowledge on practical aspects of health education sessions was comparatively low. This was also demonstrated when assessing the practices on PCC sessions.

No uniformity was seen in conducting PCC clinics or educational sessions. Although 95% conduct PCC clinics nearly 20% did not conduct PCC educational sessions. Practices of PHMs differed significantly with regard to the number of clinics and sessions conducted and the coverage. This may be due to the differences in the client load as well as the lack of guidance, motivation, supervision and monitoring which warrants a well-organized national level training to cover all PHMs. These findings are in par with the study conducted in Netherlands in 2013 to assess the practices of delivering PCC in primary caregivers by recruiting 250 midwives and 449 general practitioners (GPs). This study revealed that the PCC is underserved by primary caregivers as only 27% of GPs and 20% midwives had carried out PCC consultations indicating poor practices (10).

Conclusions & Recommendations

The overall knowledge of PHMs on PCC package was high, however, in some specific components, the

knowledge level was relatively low. The knowledge level on PCC package was significantly associated with the age of the PHM, marital status, service experience and time taken to travel for work. About 60% of the PHMs have not received any training on PCC. Participation for PCC clinics and sessions was found to be low, indicating less identification and referral of couples for the service. There was no uniformity of conducting the PCC clinics as well as educational sessions. Most of the couples received the screening tool at the clinic, which has missed the opportunity of discussing their issues with the PHM. PHMs have missed the opportunity to identify the risk couples as they do not evaluate the screening tool. Nutritional assessment was carried out in all the clinics, but basic laboratory investigations were not carried out at any of the clinics. The topics related to good health habits/ healthy behaviour/ healthy lifestyle, good marital relationship and wellbeing of

the family, benefits of non-violence, male participation and parenthood was not discussed in most clinics during the PCC educational sessions.

It is recommended to revise the national level guideline on PCC package and service provision and to streamline the PCC services throughout the country, conduct refresher training on PCC package for all relevant public health staff as an in-service training, improve and strengthen the supervision of PCC clinics and sessions at regional, district and national level in view of improving the practices of PHMM, conduct awareness campaigns using mass media to sensitize the general population regarding the PCC and availability of services, and conduct further research on the PCC package especially at national level in order to strengthen the quality and the comprehensiveness of the PCC services and assess the clients' perceptions and clients' needs.

Public Health Implications

- The concept of preconception care (PCC) is being increasingly recognized due to its paramount importance in reducing maternal and child morbidity and mortality. A new 'Package of interventions for Preconception Care' has been introduced in 2012 by the Ministry of Health, Sri Lanka which is delivered through the existing public health system. As PHM are the corner stone of this programme, the success of PCC programme depends on their knowledge and practices.

Author Declarations

Competing interests: The authors declare that there is no competing interest.

Ethics approval and consent to participate: Ethics clearance was granted by the Ethics review Committee of the Faculty of Medicine, University of Colombo, Sri Lanka. Informed written consent was obtained from each participant prior to data collection.

Funding: Self-funded

Acknowledgements: We are grateful to the study participants and the Postgraduate Institute of Medicine, University of Colombo.

Author contributions: WA participated in the designing of the study, data collection, performed the statistical analysis and interpreting data. NH participated in the designing of the study, performing statistical analysis, interpreting data and drafted the first version of the manuscript. All authors have read and approved the final manuscript.

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