Preconception care received by women attending antenatal clinics at a Teaching Hospital in Southern Sri Lanka

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Abstract

Introduction: Preconception Care (PCC) is an important component of reproductive health care.

Objectives: To study the level of preconception preparedness of pregnant women, and factors influencing it, in order to identify possible strategies to improve PCC.

Design and Setting: A descriptive cross-sectional study conducted from 10th July to 13th August 2012 in the Antenatal Clinics of the Academic Obstetrics and Gynaecology Unit at Teaching Hospital, Mahamodara, Galle.

Method: A consecutively recruited, convenient sample of 250 pregnant women presenting for booking at <28 weeks gestation was studied. Data on demographic characteristics, PCC received and responses to 18 questions on preconception health knowledge were collected using an interviewer-administered, pre-tested structured questionnaire. Responses for each question were scored out of 10 and correlated with the demographic data of the subjects.

Results: The mean age of the subjects was 27.8 years (95% CI 27.0-28.6) and 124 (49.6%) were primigravidae. Only 68 (27.2%) of subjects had received PCC and 95 (38%) had unplanned pregnancies. Age <26 yrs, monthly family income of < Rs. 15,000, educational level < General Certificate of Education, Ordinary Level (G.C.E.O/L) and unemployment carried almost a doubling of the risk of unplanned pregnancies. (RRs 1.7 - 2.4, 95% CIs 1.2 -3.9, p < 0.005). An educational level < G.C.E.O/L also carried a higher risk of not receiving PCC (RR 1.4, 95% CI 1.2 - 1.6, p < 0.0001). Knowledge of the value of early registration with a Public Health Midwife (PHM) and preconceptional Rubella vaccination, and the risks associated with increased age, consanguinity, and exposure to passive smoking were satisfactory. Knowledge regarding pregnancy planning, awareness of PCC, effects of pre-pregnancy weight on fertility, folic acid supplementation, fertile period and birth spacing were unsatisfactory. The leading sources of preconceptional health knowledge were PHM (16.8%), specialist obstetrician (8.4%) and media (7.6%).

Conclusion: PCC of women is suboptimal and needs more attention. The primary health care team, general practitioners and specialist obstetricians should be motivated and trained to provide preconception health education and PCC to late adolescents and young women in Southern Sri Lanka.

Key words: Preconception care, preconception health education, Southern Sri Lanka

Introduction

Preconception care (PCC) has been recognized as an important component of reproductive health care in women[1]. PCC provides a good foundation for the well-being of both mother and baby through a successful pregnancy and to a healthier future generation in a country. Sri Lanka does not have a well organized program of PCC other than prenatal supplementation with folic acid and Rubella vaccination.

PCC can be defined as a set of interventions which aim to identify and modify biomedical, behavioral and social risks to a woman's health or pregnancy outcome through prevention and management[2]. The main goals are to improve birth outcomes in future pregnancies through health education, risk assessment and appropriate interventions wherever needed[3]. PCC reduces potential risk factors which may adversely affect future pregnancies, and becomes even more important especially when there is a pre-existing maternal medical illness threatening the mother or the outcome of pregnancy. In the United States of America (USA), up to more than 50% of pregnancies have been reported to be unplanned and unintended[4]. An unmet need for family planning of 8.4% and a teenage pregnancy rate of 6.5% has been reported in Sri Lanka in 2009[5]. It has been shown that unintended, unwanted or mistimed pregnancies are associated with a significantly higher risk of low birth weight and preterm delivery[6]. Furthermore, there is a possible relationship between low birth weight and increased susceptibility to chronic diseases in later life[7]. Increased rate of teenage pregnancies is also another burden to reproductive healthcare.

There is insufficient evidence regarding many PCC interventions and the best methods of integrating them into primary health care (PHC)[8]. Based on current best available evidence, women of childbearing age planning a pregnancy should take 0.04 mg folic acid daily, commencing at least one month before conception and continuing it throughout the first trimester of pregnancy. The dose of folic acid is recommended to be increased to 5 mg daily in women with obesity, epilepsy, diabetes mellitus, malabsorption syndromes or a previous history of a fetus affected by a neural tube defect[9,10]. Although there are concerns and conflicting reports of the possibility of an increased risk of colorectal cancer with increased

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intake of folic acid, routine prenatal supplementation with folic acid is recommended. Consumption of folate as natural food folate has been shown to be ineffective in optimizing the folate status because of its lower bioavailability. Therefore supplemental folate is required and many countries have commenced food fortification with folate[10]. It has been reported that PCC improves folate intake[11]. However folic acid supplementation programs and folic acid fortification programs should be carefully monitored until the concerns regarding the possible increased risk of colo-rectal cancer is resolved[12]. Although Sri Lanka has a program of prenatal supplementation with folic acid for women planning a pregnancy, national data for the population coverage of this program is not available[13].

It has been recommended that National Rubella Vaccination Programs should ensure that their strategies should include protection of women in childbearing age, in order to prevent Congenital Rubella Syndrome[14]. In 2009, 94.8% of pregnant women in Sri Lanka were protected against Rubella at the time of antenatal registration[5].

Two studies done in Colombo in 2003 and 2007 reported poor levels of PCC[15,16]. An external review of maternal and newborn health (MNH) in Sri Lanka in 2007 recommended that programs should be developed to address preconception needs and concerns especially among young people, in order to improve MNH outcomes[16]. In the National Strategic Plan on MNH for the period 2012-2016, a PCC package has been designed for implementation, indicators to monitor PCC have been defined, and targets have been set for 2016[13]. Therefore it was decided to study the current level of preconception preparedness and factors influencing it, among women attending antenatal clinics at a Teaching Hospital in Southern Sri Lanka. This would be of great value in implementing the PCC package and monitoring its coverage and impact in the population.

Method

A descriptive cross-sectional study was conducted from 10th July to 13th August 2012. From the pregnant women presenting for booking at the antenatal clinics of the Academic Department of Obstetrics and Gynaecology at Teaching Hospital, Mahamodara, Galle, a convenient sample of 250 consecutive pregnant women with less than 28 weeks of period of gestation (POG) were recruited. Data were collected by two trained interviewers using a pre-tested, structured questionnaire, after obtaining informed written consent. The questionnaire was administered in Sinhala and it consisted of two sections. Section- 01 was on socio-demographic details such as age, employment status, monthly family income and educational level. The parity, current POG at booking and the POG at which they registered with the Public Health Midwife (PHM) were also recorded. In section-02, there were 18 structured questions to evaluate the preconception health knowledge. These questions covered the main areas of PCC viz: pregnancy planning, knowledge on risks of consanguinity, familial inheritance, teratogenicity, importance of early registration with the PHM, fertile period, effects of maternal age at conception, effect of pre-pregnancy weight on fertility, birth spacing, folic acid supplementation and vaccination against rubella.

Seven questions had yes or no responses and 11 had more than two responses with only one being correct. Each yes or correct response scored 10 and any other response scored zero giving a maximum possible score of 180. The frequency and percentage of correct responses and the scores for each correct response were calculated. Descriptive statistics were used to summarize the data. Pearson Chi-square test and Fisher's Exact test were performed for significance testing among categorical variables, and relative risks were calculated. A p value < 0.05 was considered as statistically significant. Ethical approval was obtained from the Ethical Review Committee, Faculty of Medicine, University of Ruhuna, Galle. Approval was also obtained from the Director, Teaching Hospital, Mahamodara.

Results

The mean age of women in the study sample was 27.8 years (95% CI 27.0-28.6) with a range of 17 to 43 years. The median parity was 2 (IQR 1-2) with a range of 1 to 7. Of the 250 subjects, 63 (25.2%) had a monthly family income of less than Rs.15,000. A vast majority (79.6%) of the women were housewives and 89 (35.6%) of them had an educational level below the General Certificate of Education, Ordinary Level (G.C.E O/L). Of the 250 subjects, only 68 (27.2%) had received PCC and 95 (38%) had unplanned pregnancies (Table 1).

The mean preconception health knowledge score in the study sample was 108.7/180 (60.4%, 95% CI 58% - 63%). University graduates had the highest mean score of 140.2/180 (77.9%, 95% CI 72.6% - 83.2) and those with an educational level of <grade 05 had the lowest mean score of 50.4/180 (28%, 95% CI 20.4% - 35.6%). Knowledge regarding rubella vaccination and the adverse effects to the baby by exposure to passive smoking in early pregnancy had very high scores of 98.8% and 97.2% respectively. Knowledge regarding the availability of PCC prior to embarking on a pregnancy had the lowest score of 27.2% [Table 1].

Knowledge of the value of early registration with a PHM and preconceptional rubella vaccination, and the risks associated with increased age, consanguinity, and exposure to passive smoking were satisfactory with scores above 75% in each. Knowledge regarding pregnancy planning, awareness of PCC, effects of pre-pregnancy weight on fertility, folic acid supplementation, fertile period and birth spacing were unsatisfactory. Although knowledge about folic acid scored 90.8%, knowledge about adverse effects associated with not taking folic acid preconceptionally scored 61.2% and only 43.6% of women had received folic acid pre conceptionally (Table 1).

Table 1. Unplanned pregnancies, preconception care received and preconception health knowledge score in relation to demographic characteristics, (n=250)

		Unplanned pregnancies 95 (38%)	*Preconception care received 68 (27.2%)*	*Preconception health knowledge score (%)*
Age (years)				
<20	(n=27)	14 (51.9)	04 (14.8)	47.7
20-25	(n=49)	28 (57.1)	12 (24.5)	53.6
26-30	(n=79)	25 (31.6)	19 (24.1)	63.4
31-35	(n=59)	16 (27.1)	20 (33.9)	65.8
>35	(n=36)	12 (33.3)	13 (36.1)	63.9
Monthly family income				
<Rs.15,000	(n=63)	34 (54)	11 (17.5)	54.2
Rs.15,000 – 25,000	(n=122)	45 (36.9)	34 (27.9)	59.5
>Rs.25,000	(n=65)	16 (24.6)	23 (35.4)	68.1
Employment status				
Employed	(n=51)	10 (19.6)	19 (37.3)	69.3
Unemployed	(n=199)	85 (42.7)	49 (24.6)	58.1
Educational level				
<Grade 05	(n=05)	05 (100)	0	28.0
Grade 05 to Grade – 11	(n=84)	49 (58.3)	10 (11.9)	50.9
G.C.E. Ordinary Level passed	(n=76)	22 (28.9)	24 (31.6)	60.9
G.C.E. Advanced Level passed	(n=63)	16 (25.4)	20 (31.7)	69.0
University graduates	(n=22)	3 (13.6)	14 (63.6)	77.9
Parity				
Primipara	(n=124)	44 (35.5)	38 (30.7)	60.4
Multipara	(n=118)	45 (38.1)	29 (24.6)	61.5
Grandmultipara	(n=08)	06 (75.0)	01 (12.5)	43.3

* G.C.E. = General Certificate of Education

Table 2. Association of unplanned pregnancies and not receiving preconception care with demographic characteristics

Demographic characteristic	*Unplanned pregnancies*	*Not receiving preconception care*
Age < 26 years	RR = 1.8 95% CI = 1.3 - 2.5 p = 0.0002	RR = 1.1 95% CI = 1.0 - 1.3 p = 0.15
Monthly family income < Rs.15,000	RR = 1.7 95% CI = 1.2 - 2.3 p = 0.0025	RR = 1.2 95% CI= 1.0 - 1.4 p = 0.045
Educational level < G.C.E. O/L	RR = 2.4 95% CI = 1.7 - 3.3 p < 0.0001	RR = 1.4 95% CI = 1.2 - 1.6 p < 0.0001
Unemployment	RR = 2.2 95% CI = 1.2 - 3.9 p = 0.002	RR = 1.2 95% CI = 1.0 - 1.5 p = 0.07
Multiparity	RR = 1.1 95% CI = 0.8 - 1.6 p = 0.42	RR = 1.1 95% CI = 0.9 - 1.3 p = 0.23

RR = Relative Risk. 95% CI = 95% Confidence Interval. G.C.E. O/L = General Certificate of Education Ordinary Level.

Risk factors for unplanned pregnancies included age <26 yrs, monthly family income of < Rs. 15,000, educational level < G.C.E.O/L and unemployment, and they carried almost a doubling of the risk of unplanned pregnancies. (Relative Risks ranging from 1.7 - 2.4, 95% Confidence Intervals ranging from 1.2 - 3.9, $p < 0.005$). An educational level <G.C.E.O/L also carried a higher risk of not receiving PCC (RR 1.4, 95% CI 1.2 - 1.6, $p < 0.0001$).

Of the 250 subjects, 192 (76.8%) and 208 (83.2%) were aware of the possible risks associated with a consan-guinous marriage and the possibility of inheriting diseases respectively. More than 90% of subjects were aware about folic acid and the importance of registering with a PHM early. However, only 153 (61.2%) were aware about the possible adverse effects of not taking preconceptional folate and only 109 (43.6%) had taken preconceptional folate. Although more than 98% were aware about rubella vaccination, only 239 (95.6%) had received rubella vaccination and only 219 (87.6%) were aware about the possible adverse effects of not having rubella vaccination. There were 140 (56%) who were not aware about the fertile period and 201 (80.4%) were aware about the adverse effects of increasing maternal age on fertility. However only, 127 (50.8%) were aware that pre-pregnancy weight has an effect on fertility. There were 243 (97.2%) who were aware about the possible adverse effects of passive smoking and 184 (73.6%) who were aware about the possible adverse effects of irradiation. Of the 250 subjects, 189 (75.6%) thought that the ideal spacing between two children should be 2 to 3 years, but 45 (18%) did not have any idea about birth spacing.

The PHM was the commonest source of pre conception health education and she was responsible for providing PCC in 42 (61.8%) of the 68 subjects who received PCC. Specialist obstetricians were responsible for providing PCC in 21 (30.9 %) of the 68 who received PCC. The media contributed to preconception health education in 19 (27.9%) of the 68 who received PCC and 7.6% of the total study sample of 250 (Table 3).

Table 3. Sources of preconception health knowledge (n=250)

Source of preconception health knowledge	*Number (%)*
Public Health Midwife (PHM)	42 (16.8%)
Specialist obstetrician	21 (8.4%)
Media	19 (7.6%)
General practitioner	17 (6.8%)
Medical officer of health (MOH)	9 (3.6%)
Peers	5 (2%)
Total	68* (27.2%)

*Some women had received preconception health knowledge from multiple sources.

Women with planned pregnancies (n= 155) and women receiving PCC (n=68) were more likely to register with the PHM early. ie. at < 8 weeks. (RR 1.4, 95% CI 1.2-1.7, $p <0.001$ and RR 1.3, 95% CI 1.1.-1.5, $p < 0.005$ respectively). However no such association was seen with booking at Teaching Hospital Mahamodara early. ie < 20 weeks (Table 4).

Table 4. Association of unplanned pregnancies and preconception care with health seeking behavior

	Registration with the public health midwife ≤ 8 weeks	*Booking at Teaching Hospital, Mahamodara at a period of gestation < 20 weeks*
Unplanned pregnancies (n=95)	54 (57%) RR = 0.7 95% CI = 0.6 - 0.9 p <0.0001	60 (63.2%) RR = 1.0 95% CI = 0.8 - 1.2 p = 0.92
Planned pregnancies (n=155)	126 (81%) RR = 1.4 95% CI = 1.2 - 1.7 p <0.0001	97 (62.6%) RR = 1.09 5% CI = 0.8 - 1.2 p = 0.92
Not receiving preconception care (n=182)	122 (67%) RR = 0.8 95% CI = 0.7 - 0.9 p = 0.004	118 (64.8%) 1RR = 1.1 95% CI = 0.9 - 1.4 p = 0.28
Receiving preconception care (n=68)	58 (85.3%) RR = 1.3 95% CI = 1.1 - 1.5 p = 0.004	39 (57.4%) RR = 0.9 95% CI = 0.7 - 1.1 p = 0.28

RR = Relative Risk. 95% CI = 95% Confidence Interval.

Discussion

The most important observations in the current study are that a relatively younger age, a lower level of education, unemployment, and a lower monthly family income, carried almost a doubling of the risk of unplanned pregnancies, and that a lower monthly family income also carried a higher risk of not receiving PCC. Therefore interventions to improve PCC should target this vulnerable population which reflects a vicious circle. The other important observation was that planned pregnancies and women receiving PCC were more likely to register with a PHM early, ie at ≤ 8 weeks gestation. This would enable early detection of any risk factors in the pregnancy, appropriate remedial measures to be adopted if possible, and appropriate and early referral for specialist care when indicated.

In the current study there were 38% unplanned pregnancies and 10.8% teenage pregnancies. In a study carried out in the same unit in 2005, a teenage pregnancy rate of 5.3% was reported. It was also found that teenage pregnancies were significantly associated with poor education, poverty, anaemia, pregnancy induced hypertension and preterm delivery. Most of these teenage pregnancies were unplanned and due to poor knowledge of contraception, and they could have been prevented by proper counseling[18]. Some women with unplanned and teenage pregnancies may not seek antenatal care until late in the pregnancy. Therefore, there is a possibility of some of them being not included in the current study.

A considerable proportion of late adolescents in the Southern Province have been shown to be sexually active[19,20]. Considering the probable increasing trend in the rates of teenage pregnancy in the region, and the younger age associated with unsatisfactory PCC, a concerted effort is required to improve sexual and reproductive health knowledge in adolescents and young adults.

In the current study, although more than 90% of subjects were aware about folic acid and the importance of registering with a PHM early but only 61.2% were aware about the possible adverse effects of not taking preconceptional folic acid and only 43.6% had taken preconceptional folic acid. In the USA, folate intake was reported to be approximately 34% among women in reproductive age despite awareness programs[21].

In the current study, rubella vaccination was quite satisfactory with 95.6% having received it. This coverage is comparable with the national average and probably reflects the successful implementation of the National Rubella Vaccination Programme in Southern Sri Lanka. In the National Strategic Plan for Sri Lanka, the target for 2016 is to have at least 98% of pregnant women protected against rubella at the time of antenatal registration[13]. In the current study the knowledge on fertile period, birth spacing and common familial diseases were suboptimal.

Although a non-probability sample was used, the data from the current study probably reflects to a significant degree the situation in the general population in the Galle district in particular and perhaps Southern Sri Lanka in general. This is because approximately 85% of deliveries in Sri Lanka occur in tertiary care facilities[22]. The demographic characteristics of the study population probably reflect the general population in the Galle district.

In the current study only 27.2% of women had received PCC. A study done in Colombo in 2001 reported that only 21% of women had received PCC at that time[15]. The current study, carried out almost 10 years later, indicates that despite improvements in the primary health care system, PCC has not been properly addressed still in Southern Sri Lanka.

Overall a markedly greater proportion of women in Colombo had acquired some degree of preconception health knowledge in comparison to women in Galle. Although electronic and print media were the main sources and contributed to approximately 82% of preconception health knowledge among women attending antenatal clinics in Colombo[15], and 60.2% of women in an antenatal ward reported receiving preconception health knowledge from telecasted maternal health education programs[16], only 7.6% of women in Galle had gained preconception health knowledge from the media. This is probably due to socio-economic and demographic differences in the two populations. The proportion of women < 24 yrs was possibly less in the Colombo study compared to the Galle study (20% vs 27%, $p < 0.07$) and the proportion of women educated to a level < G.C.E. O/L was markedly less in the Colombo study compared to the Galle study (18% vs 36%, $p < 0.0001$) (Table 6). Furthermore, although this aspect was not analyzed in the Colombo study, 25% of women in the Galle study had a monthly family income of < Rs. 15,000/=. Apparently the relatively young, poor and less educated women in the Galle district are not keen to read or watch health education material in the print or electronic media.

Table 5. Sources of preconception health knowledge, Colombo[15] vs Galle

Source of preconception health knowledge	*Colombo [15] (n=225)*	*Galle (n-250)*	*p*
Media (Electronic and print)	184 (81.8%)	19 (7.6%)	<0.0001
Public Health Midwife	113 (50.2%)	42 (16.8%)	<0.0001
Doctors	81 (36.0%)	47 (18.8%)	<0.0001
Peers	78 (34.7%)	5 (2%)	<0.0001

Table 6. Socio-demographic characteristics, Colombo[15] vs Galle

Source-demographic characteristic	*Colombo[15] (n=225)*	*Galle (n-250)*	*p*
Age < 24yrs	45 (20%)	68 (27%)	= 0.07
Educational level < G.C.E. O/L	41 (18%)	89 (36%)	<0.0001

Approximately 35% of women in Colombo had gained some knowledge of preconception health from their peers, in contrast to only 2% in Galle. In Galle, doctors (specialist obstetricians and gynaecologists, medical officers of health and general practitioners) were the leading source of preconception health knowledge, but contributed to preconception health knowledge in only 18.8% of the total study population of 250 women. The PHM was an important source of preconception health knowledge both in Colombo and in Galle. Since the PHM was responsible for providing preconception health knowledge and PCC for approximately 62% of the 68 women who received PCC in Galle, greater efforts are needed to improve the capacity of the PHM to provide these services. The PHM should be well-trained to provide information and counseling for women, men, families and community on essential sexual and reproductive health. The target for 2016 is to have >80% of Medical Officer of Health (MOH) areas implementing the PCC package designed for Sri Lanka and >80% of PHM trained in the delivery of this PCC package[13].

Conclusion

PCC for women is an important aspect in primary health care but appears to be suboptimal in Southern Sri Lanka. Electronic and print media may not have a great impact on providing preconception health knowledge unless the socio-economic and educational status improves in the region. Since the focus should be on the younger women, details regarding sexual and reproductive health and PCC could be included in to the curricula of schools and higher educational institutions respectively. Medical Officers of Health, Public Health Midwives and Nurses as well as General Practitioners should be motivated and trained to provide preconception health education and PCC to women in Southern Sri Lanka. Specialist Obstetricians too should focus their attention to this aspect of care.

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