A comparison of personal and family characteristics and pattern of field health service utilization of pregnant teenagers in three districts of Sri Lanka

Fernando Dulitha¹, Gunawardena Nalika², Senarath Upul², Weerasinghe Manuj Chrishantha²,
Senevirathne Rohini De Alwis², Senanayake Hemantha³, Galwaduge Chandani⁴,
De Silva Chithramalee⁵, Lokubalasooriya Ayesha⁵

Abstract

Background

This study aimed at comparing personal and family characteristics of pregnant teenagers in three districts of Sri Lanka and pattern of their field health service utilization.

Methods

A cross-sectional study was conducted among pregnant teenagers (n=504), in districts of Colombo, Anuradhapura and Batticaloa using quantitative and qualitative data collection techniques.

Results

Of the pregnant teenagers, 41.1 % were from Colombo while 34.3% and 24.3% were from Batticaloa and Anuradhapura, respectively. Colombo showed the highest (16.1%) proportion of <16 year olds. Batticaloa showed the lowest percentage (5.1%) of participants who had higher education than passing GCE (O/L).

Unmarried co-habiting pregnant teenagers was highest in Batticaloa (34.3%). A majority in all districts reported being 'legally' married. In Anuradhapura and Colombo, a majority of the marriages had occurred without the blessings of parents while in Batticaloa, parents blessed the marriage. Batticaloa showed highest proportions of spouses <19 years (21.4%) and lowest percentage (59%) of spouses who were educated higher than GCE (O/L). Approximately, one third of the mothers in three districts had 'ever worked abroad'. Teenage marriages of elder siblings and of mothers were commoner in Batticaloa and Anuradhapura.

Proportion who had planned pregnancies was highest in Batticaloa (85%). Receipt of services from the PHM was lowest in Colombo. In all districts, first contact for pregnancy related issues was the PHM.

Conclusions

The study revealed inter-district differences in personal and family characteristics and in field health services utilization. The interventions to prevent teenage pregnancy should be district specific and the design should take these differences into account.

Key words: teenage pregnancy; district variations

Introduction

Geographical variations in the occurrence of teenage pregnancies have been reported in many studies in the developed countries and a multitude of factors, especially socio-economic and cultural factors have been attributed to such differences⁽¹⁻⁴⁾. Identification of geographical differences in personal, family, and societal factors have been the basis for development of specific interventions to reduce teenage pregnancies in developed countries. Reports on geographical variations of characteristics of pregnant teenagers are scarce from the Asian countries.

The Reproductive Health Management Information System of the Family Health Bureau of the Ministry of Health, Sri Lanka, indicates that 6.5% of all pregnancies registered during the year 2010 were teenage pregnancies⁽⁵⁾. The Demographic and Health Survey 2006/07 revealed that 6.4% of women aged 15 to 19 years in Sri Lanka, had begun childbearing⁽⁶⁾. Both these sources of data in Sri Lanka on teenage pregnancy show that there are wide inter district variations in the percentage of teenage pregnancies. However, identification of inter-district differences in characteristics of pregnant teenagers in the country has not been attempted. This study aimed at comparing personal and family characteristics of pregnant teenagers and pattern of their field health service utilization, in three districts of Sri Lanka.

1. Emeritus Professor, University of Colombo

2. Faculty of Medicine, University of Colombo

3. Faculty of Medicine, University of Colombo

4. United Nations Population Fund, Sri Lanka

5. Family Health Bureau, Ministry of Health, Sri Lanka

Correspondence : nalikaguna@hotmail.com

Methods

A cross-sectional study was carried out in three districts of Sri Lanka, Anuradhapura, Batticaloa and Colombo. These districts were purposively selected, based on the information that they reported high percentages of teenage pregnancies. The fact that all major ethnic groups in the country are clustered in these three districts was also considered in selection of the districts. Within each district, three Medical Officer of Health (MOH) areas with high rates of teenage pregnancies were included in the study. Selection of the districts and the MOH areas to be included was based on the Reproductive Health Management Information System of the Family Health Bureau of Ministry of Health⁽⁵⁾.

Study population comprised all pregnant females resident in the selected MOH areas who had not completed their 20th year at the time they became pregnant and were registered with the Public Health Midwife (PHM) for antenatal care. The proportion of pregnant women registering with PHM in the study area is reported to be over 90%⁽⁵⁾. Study units were identified from the registers of the PHM over a period of four months. The age of conception was verified to be prior to the 20th birthday by cross checking the information on the period of amenorrhea on clinic records with the age based on the National identity card. A total of 510 pregnant teenagers were included.

A structured pre-tested interviewer administered questionnaire was used to collect data from the respondents. The questionnaires were developed in English and were then translated into two local languages, Sinhalese and Tamil by two bilingual specialists. These were back translated to English by two other bilingual specialists to confirm the accuracy of the translation. Each of the translated versions of the questionnaires were pre-tested among 10 pregnant teenagers resident in two MOH area outside the study areas. Data were collected by trained interviewers who were fluent in the relevant mother tongue of the respondent. Data collection in the field was closely supervised by the investigators of the study.

Those who were above the age of 20 years at the time of data collection, provided informed verbal consent, on their own. Informed verbal consent was obtained from the teenagers as well as the parents in the case of respondents who were living with their parents. If the teenagers were living on their own, consent was obtained from the teenagers

themselves. Interviews were conducted at settings within the community or at homes of the participants based on their choice. All measures were taken to ensure privacy of participants and confidentiality of the information. Ethics Review Committee of the Faculty of Medicine, University of Colombo approved the study protocol. The study was conducted from December 2010 to April 2011. Data were analyzed using the Statistical Package for the Social Sciences (SPSS version 16). Inter-district variation in personal, family characteristics and factors related to health service utilization of pregnant teenagers were described using frequency distributions.

Qualitative data collection techniques were also utilized to obtain an insight into specific issues related to personal, family characteristics. A total 79 in-depth interviews with pregnant teenagers and the spouses of teenage mothers were conducted. In addition, 17 focus group discussions (FGDs) were carried out among mothers of pregnant teenagers, school teachers and health staff. All FGDs were conducted by one of the investigators who had training and experience in conducting qualitative research activities and all field staff who conducted the in depth interviews were trained and supervised by this investigator.

Results

Comparison of characteristics of the pregnant teenagers

Of the study population of 504 pregnant teenagers, 211(41.4%) were from Colombo district with 175 (34.3 %) from Batticaloa district and 124 (24.3%) from Anuradhapura district.

Table 1 presents the basic characteristics of the pregnant teenagers by districts. There was an inter-district variation in the age distribution of the pregnant teenagers with the percentage belonging to the 16 years of age or less being higher in Colombo (16.1%) compared to Batticaloa (6.2%) and Anuradhapura (4%).

Table 1: Socio-demographic characteristics of the pregnant teenagers by districts

Characteristic	Colombo		Batticaloa		Anuradhapura	
	Number (n=211)	%	Number (n=175)	%	Number (n=124)	%
Age in completed years at the time of survey						
<=14	5	2.4	0	0.0	0	0.0
15	7	3.3	2	1.1	1	0.8
16	22	10.4	9	5.1	4	3.2
17	38	18.0	47	6.9	15	12.1
18	43	20.4	37	21.1	25	20.2
19	82	38.9	62	35.4	55	44.4
20*	14	6.6	18	10.3	24	19.4
Ethnicity						
Sinhala	149	70.6	0	0.0	120	96.8
Tamil	20	9.5	133	76.0	0	0.0
Muslim	41	19.4	42	24.0	4	3.2
Other	1	0.5	0	0.0	0	0.0
Religion						
Buddhist	124	58.8	0	0.0	119	96.0
Hindu	14	6.6	126	72.0	0	0.0
Christian	31	14.7	7	4.0	1	0.8
Islam	42	19.9	42	24.0	4	3.2
Highest educational level achieved						
No schooling	2	0.9	3	1.7	0	0.0
Grade 1-5	10	4.7	39	22.3	0	0.0
Grade 6-11 but not passed OL	172	81.5	124	70.9	111	89.5
Passed O/L and above	27	12.8	9	5.1	13	10.5
School leaving age among those who have attended school						
<10	2	1.0	5	3.2	0	0.0
10 – 12	10	5.1	17	10.8	1	0.8
13	16	8.2	13	8.3	2	1.6
14	15	7.7	21	13.4	4	3.3
15	31	15.9	27	17.2	17	13.9
16	75	38.5	44	28.0	68	55.7
>17	44	22.6	27	17.1	30	24.6
Monthly income						
No regular monthly income	14	6.6	23	13.1	14	11.3
<9999	24	11.4	43	24.6	26	20.9
10000-19999	84	39.8	76	43.4	25	2.2
20000-29999	55	26.1	20	11.4	41	33.1
>30000	34	16.1	13	7.4	18	14.5

Almost all from Anuradhapura (96.8%) and a majority from Colombo (70.6%) were Sinhalese while a majority in Batticaloa was Tamils (76%). Colombo district also had a Muslim population of 19.4%. The religious grouping was in keeping with the ethnic distribution with 72% and 24% in the Batticaloa district being in Hindu and Islam religions respectively, with a predominance of Buddhists in Anuradhapura (96.8%) and Colombo district showing a mixed pattern with only 58.8% being Buddhists.

Highest educational level achieved showed inter-district differentials with Batticaloa having the lowest percentage (5.1%) of participants who had passed GCE (O/L) or higher education levels. The age at leaving school also varied between districts with 69.6% leaving school at the ages 15-16 years in

Anuradhapura, with this percentage being lowest (45.2%) in Batticaloa. The monthly income of the family that pregnant teenager belonged to, at the time of the survey showed that the proportion who claimed not to have a regular income or an income of less than Rs 9999.00 per month was highest in Batticaloa (37.7%).

Table 2 shows some details related to sexual activities of the pregnant teenagers of the three districts. Age at first intercourse did not show a district variation with a great majority of pregnant teenagers from each district claiming that their age was between 15-19 years, at first intercourse. The highest proportion with premarital/pre-cohabitation sexual activity was reported from Anuradhapura (37.9%). In other two districts the corresponding proportion was approximately half (Colombo-16.5%; Batticaloa-17.1%).

Table 2: Details related to sexual activities of the pregnant teenagers by districts

Characteristic	Colombo		Batticaloa		Anuradhapura	
	Number (n=211)	%	Number (n=175)	%	Number (n=124)	%
Age at first intercourse in years						
10-14	11	5.2	6	3.4	5	4.0
15-19	197	93.4	165	94.3	115	92.3
No response	3	1.4	4	2.3	4	3.2
Circumstances of first sexual intercourse						
Prior to marriage/co-habitation with a lover with consent	33	15.6	30	17.1	45	36.3
Prior to marriage/cohabitation with a lover without teenager's consent	2	0.9	0	0.0	2	1.6
After marriage	176	83.4	143	81.7	75	60.5
No response	0	0.0	2	1.1	2	1.6

Comparison of the characteristics of the spouses of the pregnant teenagers

As shown in Table 3, the age pattern of spouses showed a variation among the districts with highest proportions of youngest group of spouses aged less than 19 years in Batticaloa (21.4%). Similar to pregnant females, almost all from Anuradhapura (96.8%) and a majority from Colombo (73.5%) were Sinhalese. A majority in Batticaloa were Tamils (75.4%) with 24% being Muslims. Highest educational level achieved among spouses showed

inter-district differentials with Batticaloa having the lowest percentage (59%) of spouses who had passed GCE (O/L) or higher education levels. Almost all spouses were reported to be employed in all three districts. The occupation pattern of spouses varied among the districts. A majority of spouses in Colombo were engaged in craft and related trades work (33.5%) while a majority from Batticaloa and Anuradhapura were engaged in elementary occupations (40.6%) and armed forces (33.2%) respectively.

Table 3: Characteristics of the spouses of the pregnant teenagers by district

Characteristic	Colombo		Batticaloa		Anuradhapura	
	Number (n=211)	%	Number (n=175)	%	Number (n=124)	%
Age in completed years at the time of survey						
<19	22	10.4	37	21.4	6	4.8
20-24	116	55.0	95	54.8	66	53.3
25-29	58	27.4	38	33.9	45	36.3
30-34	13	6.1	3	1.8	6	4.8
>35	2	1.0	0	0.0	1	0.8
Ethnicity						
Sinhala	155	73.5	0	0.0	120	96.8
Tamil	19	9.0	132	75.4	0	0.0
Muslim	37	17.5	42	24.0	4	3.2
Other	0	0.0	1	0.6	0	0.0
Religion						
Buddhist	137	64.9	0	0.0	120	96.8
Hindu	13	6.2	120	68.6	0	0.0
Christian	23	10.9	13	7.4	0	0.0
Islam	38	18.0	42	24.0	4	3.2
Highest educational level achieved						
No schooling	1	0.5	3	1.7	0	0.0
Grade 1-5	13	6.3	57	32.9	4	3.3
Grade 6-11 but not passed OL	161	77.4	102	59.0	104	85.2
Passed O/L and above	33	15.8	11	6.4	14	11.5
Employed at present						
Yes	209	100.0	175	100.0	123	99.2
No	0	0.0	0	0.0	1	0.8
Occupation of the spouse according to the ISCO classification						
Armed forces occupations	11	5.3	0	0.0	39	33.2
Managers	2	1.0	0	0.0	0	0.0
Professionals	2	1.0	1	0.6	1	0.8
Technicians and associate professionals	8	3.9	0	0.0	2	1.7
Clerical support workers	7	3.4	1	0.6	0	0.0
Service and sales workers	23	11.2	23	13.5	28	23.1
Skilled agricultural, forestry and fishery workers	9	4.4	30	17.6	15	12.4
Craft and related trades workers	69	33.5	39	22.9	12	9.9
Plant and machine operators, and assemblers	37	18	7	4.1	15	12.4
Elementary occupations	38	18.4	69	40.6	9	7.4

Comparison of the circumstances of the pregnancy

Comparison of circumstances that led to the pregnancy was done using both quantitative and qualitative data.

Table 4 shows the details related to the marital status. Though there were district variations, a majority of all districts reported that they were

'legally' married. However, it should be noted minimum age for legal marriage in Sri Lanka is 18 years. Living arrangements of pregnant teenagers at the time of survey showed a distinct variation among districts with the proportion of unmarried co-habiting pregnant teenagers being high in Batticaloa (34.3%) compared to 8.1% in Anuradapura and 6.7% in Colombo. Anuradhapura reported a high proportion (55.6%) who indicated that the marriage/co-habiting was a sudden decision.

Table 4: Circumstances of the pregnancy by district

Characteristic	Colombo		Batticaloa		Anuradhapura	
	Number (n=211)	%	Number (n=175)	%	Number (n=124)	%
Marital status						
'Legally' married	195	92.4	120	68.6	108	87.1
Not 'legally' married	16	7.6	55	31.4	16	12.9
Current living status						
Married and living together	197	93.4	111	63.5	110	88.7
Married but living separately	0	0.0	2	1.1	2	1.6
Unmarried but Cohabiting	14	6.7	60	34.3	10	8.1
No response	0	0.0	2	1.1	2	1.6
Whether marriage/co-habiting was following a love affair or proposal						
Love affair	176	83.8	133	76.0	81	65.3
Proposal by parents with my consent	31	14.7	37	21.1	42	33.9
Proposal by parents without my consent	0	0.0	1	0.6	0	0.0
Other	4	1.3	4	2.3	1	0.8
Whether the marriage/co-habiting was planned or sudden decision						
Planned with parents	109	52.7	130	74.3	48	38.7
Planned without parents	41	19.4	16	9.1	7	5.6
Sudden decision	61	28.9	29	16	69	55.6

Qualitative data collection techniques revealed that in the districts of Anuradhapura and Colombo, a majority of the marriage/ co-habitation had been results of love relationships with a previously unknown person chosen by the teenage girls. A majority of girls in Anuradhapura reported that their parents did not agree with the relationship and they eloped with the partner to initiate the co-habitation/married life. Initiating the relationship with their spouse/partner had often commenced through a 'missed' call in the girls' mobile phones in Anuradhapura and Colombo while it was not so common in Batticaloa. Following initiation of the relationship, the main method of communication used by the majority of couples had been the mobile

phone. In both Colombo and Anuradhapura, at the initiation of an affair, the girl had been provided with a mobile phone by the male counterpart if she did not have one.

A substantial number of teenagers who participated in the qualitative study from Batticaloa indicated that they received blessings of the parents of both sides for the marriage even when the partners were not arranged by the parents. The age of initiating love relationship among girls were as low as 11-12 years in all the districts.

Comparison of characteristics of the family members of the pregnant teenagers

As shown in Table 5, the age pattern of the mothers of the pregnant teenagers showed no district variation. Approximately, one third of the mothers of all three districts reported having 'ever worked abroad'. Comparison of the three districts, Colombo showed lowest proportion of such mothers (28.9%).

Among the pregnant teenagers who had married sisters, proportions of the sisters who had married at an age less than 19 years were similar in the three districts. Furthermore, among the sisters who were married, the first pregnancy was at an age less than 19 years for 19.7% in Batticaloa, 20.4% in Anuradhapura and for 14.3% in Colombo district (14.3%), which were clearly high.

Table 5: characteristics of the family members of the pregnant teenagers by district

Characteristic	Colombo		Batticaloa		Anuradhapura	
	Number (n=211)	%	Number (n=175)	%	Number (n=124)	%
Mother's current age						
=<35	32	15.1	26	14.9	15	12.1
36-40	61	28.9	58	33.1	46	37.1
41-45	56	26.5	43	24.6	25	20.2
>46	50	23.7	37	21.1	36	29.0
Not alive	6	2.8	7	4.0	2	1.6
No response	6	2.8	4	2.3	0	0.0
Ever worked abroad						
Yes	61	28.9	64	36.8	44	35.8
No	144	70.6	110	63.2	79	64.2
No response	1	0.5	0	0.0	0	0.0
Age of marriage of any married sister among those who had married sisters						
At or Less than 19 years	48	24.5	46	30.1	26	26.0
More than 19 years	148	75.5	107	69.9	74	74.0
Age of first pregnancy of any sister among those who had sisters						
At or Less than 19 years	26	14.3	27	19.7	20	20.4
	156	85.7	110	80.3	78	79.6

The qualitative component of the study provided information that supported this observation. In both Batticaloa and Anuradhapura in depth interviews among field public health staff revealed that they have observed that teenage marriages occur in specific families where mother of the children in the family and also the daughters get married in the teen ages. They confirmed that this observation was true even if the marriages were not arranged by the parents.

Comparison of pattern of field health service utilization by pregnant teenagers

The teenagers were asked whether the present pregnancy was a planned pregnancy or not. The proportion who reported that the pregnancy was planned was different among the three districts with the proportion of planned pregnancies in Batticaloa (85%) being high compared to those in Colombo (45.5%) and Anuradhapura (47.6%) (Table 6). Use of contraceptives to avoid a pregnancy was inquired into from teenagers who had not planned the present pregnancy. It varied widely with use in Colombo (46%) being high compared to 23.4% in Anuradhapura and 9.2% in Batticaloa.

Table 6: Pregnancy related details and field health service utilization by the pregnant teenagers by district

Characteristic	Colombo		Batticaloa		Anuradhapura	
	Number (n=211)	%	Number (n=175)	%	Number (n=124)	%
Pregnancy planned or not						
Planned	96	45.5	147	85	59	47.6
Not planned	115	54.5	26	15	65	52.4
Knows the area PHM						
Yes	210	100.0	170	97.7	122	98.4
No	0	0.0	4	2.3	2	1.6
Know how to contact/meet the area PHM						
Yes	209	99.5	164	94.3	114	91.9
No	1	0.5	10	5.7	10	8.1
Type service received from PHM after marriage./co-habitation prior to the current pregnancy						
Advices on healthy sexual relationship						
Yes	16	7.6	51	29.4	21	16.9
No	195	92.4	124	70.6	103	83.1
Advices on planning a pregnancy						
Yes	13	6.2	71	18.9	39	30.5
No	198	93.8	142	81.1	85	68.5
Information related to contraceptive methods						
Yes	17	8.1	26	14.9	56	45.2
No	194	91.9	149	85.1	68	54.8
Discussed with the husband and family members regarding avoiding a pregnancy						
Yes	2	0.8	11	6.3	27	21.7
No	209	99.1	164	93.7	97	78.3
Advices on adverse outcome of teenage pregnancy						
Yes	19	9.1	30	17.1	57	45.9
No	192	90.9	145	82.9	67	54.1

A distinct inter-district variation was evident in the results of inquiries into receipt of advices related to planning a pregnancy from the PHM after marriage./co-habitation prior to the current pregnancy. A very high proportion of teenagers in Colombo district (93.8%) reported that they did not receive any of the advices we inquired into. Though lower than Colombo, a great majority of teenagers from the other two districts also reported that they did not receive any of the advices (Batticaloa-81.1%: Anuradhapura-68.5%). However, among the three districts, Anuradhapura showed the highest proportions of teenagers who had received all the advices we inquired into.

Available information from the qualitative component of the study indicated that in all three districts, teenage pregnancy was associated with lower middle and lowest social segments in the society who rely on the state health system. In rural

parts of Batticaloa and Anuradhapura, private health care was not an option. In Colombo, though for some pregnant teenagers, the initial encounter was with the general practitioner, private antenatal care was limited to such initial contacts. All qualitative inquiries reiterated that the first contact health care person for a majority on pregnancy related issues in all three districts was the PHM. Information gathered clearly indicated that there were no apparent 'social' barriers for a teenager to attend an ante natal care in all three districts.

Discussion

The inter-district variation of teenage pregnancy rates in Sri Lanka, based on routinely available data has been documented highlighting the need for addressing issue in varying intensity targeting district specific factors that influence teenage pregnancy⁽⁷⁾.

In Sri Lanka, even though the health care delivery system is devolved to provinces, the policy decisions are taken by the Ministry of Health at the central level. Advocating for district specific interventions to prevent teenage pregnancy requires evidence on district differentials of factors that influence teenage pregnancy. The present study compared personal and family characteristics of pregnant teenagers in an attempt to generate evidence related to factors influencing inter-district variations. Pattern of field health service utilization of pregnant teenagers in three districts of Sri Lanka were compared to identify any service gaps that may have contributed to the district variations.

In the present study, the age pattern revealed a low proportion of very young pregnant teenagers in all three districts. The corresponding proportion was 27.5% in 2005 in the southern part of Sri Lanka as reported by a hospital based study⁽¹⁰⁾. However, the very young age of initiating love relationship in all the districts as revealed in the qualitative inquiry of the present study and the facts that considerable proportions claimed that they have engaged in sexual intercourse prior to marriage/co-habitation with a lover with consent, highlights the need to target very young in the interventions of preventing teenage pregnancy in all the districts.

Though a distinct variation was seen among the districts with regards to ethnicity and the religion of pregnant teenagers in the present study, it should be noted that this was in keeping with the ethnic and religion pattern of the districts they represented. Hence, we cannot hypothesize ethnicity and religion to be factors influencing district variations of teenage pregnancy rates. However, there are indications from other researchers that religion may be a factor influencing teenage pregnancy. Hindu teenagers are more likely to become pregnant in Nepal ($p < 0.001$) than Buddhist teenagers⁽⁸⁾. A scarcity of literature on teenage pregnancy from South Asian countries like Pakistan and Maldives with high proportions of populations following Islam religion has hindered evidence of influence of Islam religion on teenage pregnancy.

The present study showed high proportions of teenagers with low attainment of educational status in all three districts, even though the proportions varied considerably. Influence of low education attainment on teenage pregnancy has been confirmed by the findings in South Asian countries of India, Nepal and Bangladesh⁽⁸⁻¹⁴⁾. Two previous hospital based studies in Sri Lanka also reported that pregnant teenagers are comparatively less

educated^(15,16). Improving young women's education has multiple health and social benefits⁽¹⁷⁾. Thus, it is justifiable to focus on improving educational attainment among girls in all districts, in the efforts of preventing teenage pregnancies.

Low socio-economic status is another attribute of pregnant teenagers which was highlighted as a characteristic in the present study especially in the district of Batticaloa. This is a consistent findings in other Sri Lankan studies^(15,16) and in studies from other South Asian countries⁽⁸⁻¹⁴⁾. Studies in developed countries also have highlighted the importance of socio economic status in influencing the geographical variations of teenage pregnancies⁽¹⁸⁾. Improvements of socio-economic status require broad based social interventions at a national level. But this finding can be used in identifying the target groups that need the pregnancy retention interventions, most.

Not many studies on teenage pregnancies have studied characteristics of spouses. Though varied between districts, spouses of the teenagers in the present study were young with a low level of education from poor economic backgrounds, especially so in Batticaloa district. Though occupied, spouses in Colombo and Batticaloa were mostly engaged in 'unstable' occupations indicating the vulnerability of the young couple to further economic deprivation in their family life with a child in the future. Evidence of unstable occupations among spouses was evident from India from a study which found that 70.5% of the spouses of the teenage pregnant mothers to be labourers⁽¹⁹⁾.

The legal age of marriage in Sri Lanka is 18 years. In the present study, a majority in all districts claimed that they were "legally married". However, age distribution showed that most in all districts were under the legal age of marriage even at the time of survey. In Sri Lanka, when underage couples request their marriage to be registered, the marriage registrars issue a document notifying them of the earliest date that they can get married (the date that the couple reaches the legal age of marriage). It was found that this document was regarded as a "legal marriage certificate" by teenagers. This explains the reasons for a majority of all districts to report their marital status as 'legally' married.

Sudden decisions related to marriage/co-habitation which was as high as 55.6% in Anuradhapura. This should be considered a serious lapse in decision making life skills of the young girls and their spouses/partners included in the study.

The 'accidental' nature of the initiation of the relationship, the fact that the relationships were very short term prior to marriage/co-habitation as revealed in the qualitative study, can be taken as further evidence of lapses in life skills.

Parental characteristics of the pregnant teenagers in all districts showed that they themselves were mostly young with low levels of education. Approximately, one third of the mothers of all three districts reported having 'ever worked abroad'. Similar family attributes have been reported by other researchers⁽²⁰⁾. Teenage pregnancy among mothers and sisters has been shown to be a risk factor for teenage pregnancy⁽²⁰⁾. The present study also revealed that the teenage pregnancy rates among sisters in all districts are higher than the rates reported for Sri Lanka in the Demographic and Health survey 2006/07⁽⁶⁾.

There were many gaps in reproductive health related field service utilization in all districts with specific services particularly deficient in some districts. All districts showed unacceptable rates of planned teenage pregnancies with a very high rate of planned pregnancy rate in Batticaloa. Moreover, use of contraceptives to avoid a pregnancy among teenagers who had not planned the present pregnancy was low in all districts with this being particularly low in Batticaloa. Receipt of advices related to avoiding a teenage pregnancy from the PHM after marriage/co-habitation prior to the current pregnancy was low in all districts and was particularly low in Colombo district. The importance of this service is further reiterated in the light of high rates of premarital sex in all three districts. The findings of qualitative component of the study indicating that in all three districts, teenagers rely on the state health system and the fact that first contact health care person for a majority on pregnancy related issues in all three districts was the Public Health Midwife indicate the importance of improving these services in attempting to prevent teenage pregnancies.

Conclusions

Study revealed that pregnant teenagers in Colombo district to be younger compared to those in Anuradhapura and Batticaloa while least educated and poorest teenagers were from Batticaloa district. Occupations of spouses varied amongst districts. Reporting of premarital sex and sudden decisions related to marriage/co-habitation was highest in Anuradhapura. The study revealed overall deficiencies in reproductive health services to

married/co-habiting teenagers with distinct inter-district differences.

Based on the identified differences in personal and family characteristics among pregnant teenagers, the study recommends a district based approach in identifying target groups and in designing teenage pregnancy preventive interventions. The study further highlights the need to target teenagers identified to be at risk of getting pregnant with specific reproductive health services to prevent a pregnancy. It is recommend that existing field health services be utilizing in delivering teenagers with reproductive health services.

Furthermore, findings in this study revealed deficiencies and inter-district differences in service provision by PHMs. In order to rectify those deficiencies, a district based approach is essential.

Disclosure of interest

The authors declared no potential conflicts of interest to the research, authorship and/or publication of this article.

Contribution of Authorship

All authors contributed in conceptualizing the study and in designing the methods of the study. Authors DF, NG, US and MCW planned and implemented data collection, entered, analysed and interpreted the data for the study. All contributed in preparation of the manuscript of the article.

Authors- Fernando Dulitha (DF), Gunawardena Nalika (NG), Senarath Upul(US), Weerasinghe Manuj Chrishantha(MCW), Senevirathne Rohini De Alwis, Senanayake Hemantha, Galwaduge Chandani, De Silva Chithramalee, Lokubalasooriya Ayesha

Details of ethics approval

Ethical clearance was obtained from the Ethics Review Committee of the Faculty of Medicine, University of Colombo.

Funding

This research was financially supported by the United Nationals Population Fund, Sri Lanka.

References

1. McLeod A. Changing patterns of teenage pregnancy: population based study of small areas. *BMJ*. 2001; 323(7306):199-203.
2. Smith T. Influence of socioeconomic factors in attaining targets for reducing teenage pregnancies. *BMJ*. 1993; 306:1232-5.
3. Vikat A, Rimpelo EK, Rimpelo M. Socio demographic differences in the occurrence of teenage pregnancies in Finland- a follow up study. *Journal of Epidemiology and Community Health*. 2002;56:659-668.
4. Wendy LH. Trends in adolescent sexual behaviour, contraceptives, pregnancy and pregnancy resolution in US Chapter 1, Nutrition and the Adolescent.; available from: www.epi.umn.edu/let/let/pubs.nmpa.shtm, Accessed 17/10/12.
5. Family Health Bureau. Reproductive Health Management Information System. Colombo, Sri Lanka: Family Health Bureau Ministry of Health, Sri Lanka; 2010.
6. Department of Census and Statistics and Ministry of Healthcare & Nutrition. Sri Lanka Demographic and Health Survey 2006-2007. Department of Census and Statistics and Ministry of Healthcare & Nutrition; 2009.
7. Fernando D, Gunawardena NS, Senarath U, Weerasinghe MC, Galwaduge C, De Silva C. Prevalence, trends and districts differentials in teenage pregnancies. *Journal of the College of Community Physicians of Sri Lanka*. 2011;16(2):21-30.
8. Sharma A, Verma K, Khatri S, Kannan A. Determinants of pregnancy in adolescents in Nepal. *Indian Journal of Paediatrics*. 2002;69: 19-22.
9. Shrestha S. Socio-cultural factors influencing adolescent pregnancy in rural Nepal. *International Journal of Adolescent Medicine & Health*. 2002; 14: 101-109.
10. Brennan L, McDonald J, Shlomowitz R. Teenage births and final adult height of mothers in India. *Journal of Biosocial Science*. 2005; 37: 185-191.
11. Khandait D, Ambadekar N, Zodpey S, Vasudeo N. Maternal age as a risk factor for stillbirth. *Indian Journal of Public Health*. 2000; 44: 28-30.
12. Rashid S. Emerging changes in reproductive behaviour among married adolescent girls in an urban slum in Dhaka, Bangladesh. *Reproductive Health Matters*. 2006; 14: 151-159.
13. Sharma A, Verma K, Khatri S, Kannan A. Pregnancy in adolescents: a study of risks and outcome in Eastern Nepal. *Indian Pediatrics*. 2001; 38: 1405-1409.
14. Ganatra B, Hirve S. Induced abortions among adolescent women in rural Maharashtra, India. *Reproductive Health Matters*. 2002; 10: 76-85.
15. Goonewardene IMR, Deeyagaha Waduge RPK. Adverse effects of teenage pregnancy. *Ceylon Medical Journal*. 2005;50(3): 116-120.
16. Weerasekera D. Adolescent pregnancies-is the outcome different? *Ceylon Medical Journal*. 1997; 42: 16-17.
17. Jayaweera, S. 199). *Gender and Education in Sri Lanka: Women, Schooling and Work*. CENWOR, Sri Lanka.
18. Diamond I, Clements S, Ingham R. Spatial variation in teenage conceptions. *South West England Journal of the Royal Statistical Society*. 1999;162(3):273-289.
19. Ganatra B, Hirve S. Induced abortions among adolescent women in rural Maharashtra, India. *Reproductive Health Matters*. 2002; 10: 76-85.
20. Miller BC, Benson B, Galbraith KA. Family relationships and adolescent pregnancy risk: a research synthesis. *Dev Rev* 2001;21:1-38