

TRAINING OF SERVICE PROVIDERS ON EMERGENCY CONTRACEPTION: EXPERIENCE IN MUMBAI

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ABSTRACT

The Government of India included emergency contraceptive services in the National Family Welfare Programme in 2003; however, the awareness and knowledge on Emergency Contraception (EC) is inadequate not only among the potential users and community but also among the service providers. At the request of MCGM (Municipal Corporation of Greater Mumbai) a training Programme on EC was designed with the objective of operationalising EC services within the health care system of MCGM. The objectives were to assess and improve the awareness and knowledge of EC among Medical Officers (MOs) and Public Health Nurses (PHNs) serving at the Urban Health Posts. (UHPs). Pre and post training questionnaires were administered to assess the impact of the training Programme. There was significant improvement in the level of knowledge among both the groups in post training as compared to pre training on basic aspects of EC, availability of dedicated product, its timing, dosage, regimen and mode of action. Myths and misconceptions regarding EC were also reduced in post training as compared to pre training responses. However, few gaps remained which emphasize the need for continuing medical education of the service providers.

Key Words: Emergency contraception, Service providers, Knowledge, Pre-training, Post-training

Emergency Contraception (EC) refers to contraception used as an emergency method to prevent pregnancy following unprotected, possibly fertile intercourse (WHO). The available methods are combined oral contraceptive pills containing ethinyl estradiol and levonorgestrel, levonorgestrel only pills and copper releasing intrauterine devices. The appropriate and timely use of EC pills can avert almost 80 per cent of the anticipated pregnancies. Emergency Contraceptive Pills (ECPs) are hormonal contraceptives that can be used within 72 hours to prevent pregnancy following unprotected intercourse.

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In India, 21 per cent of the pregnancies are unwanted.¹ About 12 million abortions occur annually in our country; of which 6.5 million are induced and majority are conducted by untrained persons under unhygienic conditions. As a result, many women develop sepsis and other serious complications leading to death. Eight per cent of maternal deaths in India are due to abortion complications², many of which could be avoided by introducing emergency contraceptives in the programme and making it widely available through the health system network to all those women who need it. From this perspective, EC is not only a back up support in case of unprotected intercourse but also a major reproductive health intervention with many positive outcomes, particularly decline in unwanted pregnancies and reduction in the number of induced abortions.

Taking all these factors into consideration the Government of India decided to provide access to EC services through the public health infrastructure and accordingly, EC has been included in the National Family Welfare Programme since 2003. The dedicated product for EC is levonorgestrel, which is available in all the government health centres in the country. However sensitization and training of the service providers on EC is very essential before they start providing services.

In India, the knowledge on EC is inadequate not only among the potential users and the community, but also among the service providers, who can play a key role only if they are properly educated about the method. The few baseline surveys and studies conducted in India have revealed an extremely poor awareness among prospective users about EC. (2-10% in most studies). These studies also highlight incomplete knowledge about EC amongst health care providers, including doctors and nursing staff.³

The MCGM provides contraceptive services through the health care providers in various set-ups, most importantly through the UHPs of Mumbai. Though the central supply of dedicated EC pills had arrived at MCGM, the service providers had not received any training on EC; hence, there was a need to train them before the services could be initiated at the UHPs in Mumbai. At the request of MCGM, a training Programme on EC was organized for MOs and PHNs working at the UHPs of the MCGM. The training Programme was designed to provide them with basic scientific information on the contents of the EC pills, mode of action, indications, contraindications, side effects, counselling issues, follow-up details including what should be done if EC fails.

OBJECTIVES

1. To assess the level of awareness and knowledge of EC among MOs and PHNs working at UHPs of MCGM in Mumbai; and
2. To assess the impact of training on these parameters among the MOs and PHNs

METHODOLOGY

The training programme had three components:

1. Development of training material and programme;
2. Conducting training programme; and
3. Assessment of the impact of training.

Development of Training Material and Programme

The training material was developed after reviewing all the available national and international training materials on EC. The major source was Government of India's training manual on EC for medical officers.⁴ The training material and the programme was developed based on the content of their previous training and profile of activities that the service providers were involved, after discussing with the MCGM authorities. Separate training material for doctors and PHNs was developed. Resource persons were from National Institute for Research in Reproductive Health (ICMR), belonging to the specialties of Public Health and Obstetrics and Gynaecology.

Conducting Training Programme

A one-day training programme was conducted for the health care providers viz. MOs and PHNs of the UHPs of MCGM during March-April 2006. The training programme was conducted in separate sessions for the MOs and PHNs. 36 MOs (in one batch) while 141 PHNs (divided into three batches) participated in the training programme.

Before initiating the training programme, a learning environment where participants can feel free and comfortable to ask questions was created by the resource persons. The participants were requested to fill in a semi-structured questionnaire which was in English for MOs and in the local language (Marathi) for

PHNs. The resource persons delivered training in the form of lectures with the help of power point presentations/ transparencies. Background material was provided to all the participants. They were also shown the packet of ECPs – E- pills (available at the government centres).

The three-hour training included three sessions. Session one covered the introduction, overview of all the available contraceptives in the programme; including EC, the need for EC and overview of the methods of EC. The second session was focussed on the dedicated method of EC i.e. levonorgestrel – its dose, time ‘window’ , interval between doses, indications, effectiveness, side-effects and their management, initiation of regular contraception after EC use and follow up. The third session included counselling aspects, practical considerations while prescribing EC and some case studies. Reinforcement of key messages was done by the resource persons at the end of each session. Also the participants interacted with the resource persons to clarify their doubts and dispel common misconceptions about EC during the sessions and at the end of each session.

Assessment of the Impact of Training

At the end, to assess the impact of training, the participants were requested to fill in the post-training questionnaire.

Data were entered and analyzed using the SPSS version 11 software.

FINDINGS AND DISCUSSION

Background Information of Service Providers

Medical Officers

Among the total of 36 MOs, 22 (61.1%) were females while 14 (38.8%) were males. Majority i.e 29 (80.5%) had MBBS qualification, 5 (13.8%) had done diploma after MBBS and 2 (5.5%) had completed post-graduation. The mean age was 38.01 years. The orientation training received was mainly on Reproductive and Child Health ranging from 8 days to 30 days (47.2%) while remaining had received training on RCH, tuberculosis and HIV/AIDS.

Public Health Nurses

The mean age of PHNs was 41.3 years. Majority of them had received training on family planning, however, they had not received any training on EC.

TABLE 1
PERCENTAGE OF MOs WHO HAD BASIC KNOWLEDGE ABOUT EC
(CORRECT RESPONSE) (N= 36)

Basic Knowledge	Pre-training No. (%)	Post-training No. (%)
What is EC?	19(52.8)	33 (91.7)
	$X^2= 13.6$, $p^*= 0.001$, $df=2$)	
Indications		
Unprotected intercourse	22 (61.1)	36 (100)
	$X^2= 17.3$, $p^*= 0.000$, $df=1$)	
Breakage/slippage of condom	10 (27.8)	30 (83.3)
	$X^2= 22.5$, $p^*= 0.000$, $df=1$)	
Forgotten OC pills	12 (33.3)	31(86.1)
	$X^2= 20.8$, $p^*= 0.000$, $df=1$)	
Rape/sexual assault	15 (41.7)	32(86.1)
	$X^2= 15.4$, $p^*= 0.000$, $df=1$)	

(*p – highly significant)

Table 1 shows a significant improvement in the level of knowledge among the medical officers on basic aspects such as what is EC and its indications in the post-training responses as compared to pre-training responses. A study conducted among health care providers (Obstetricians/ Gynaecologists, medical practitioners, family planning counsellors, nurses and ANMs) in Greater Mumbai revealed an overall 48 per cent awareness among this group ⁵ which is slightly less than in the pre-training responses in the pretest-52.8 per cent. A K Mondal et al ⁶ observed in their study the awareness among general practitioners to be 72.4 per cent (2001) which is higher than that observed in the present study in the pre-training response. S. Singh et al⁷ in their study found the awareness among practitioners in public health institutions (Central Government Health Scheme dispensaries) to be only 40 per cent. The knowledge among the general practitioners could be better probably due to the information through medical representatives. There are very less opportunities for public health institution doctors to be appraised by the

medical representatives as most of the drugs are supplied in house and this could be the reason for their lower level of knowledge as compared to the general practitioners.

TABLE 2
PERCENTAGE OF MOs GIVING CORRECT RESPONSE ABOUT AVAILABILITY OF A DEDICATED PRODUCT, THE TIMING, DOSAGE AND REGIMEN (N= 36)

Correct Responses	Pre-training No. (%)	Post-training No. (%)
Time Limit		
EC pills	15(41.7)	32 (88.9)
	$\chi^2= 20.0$, $p^*= 0.000$, $df=3$	
IUD	6 (16.7)	21 (58.3)
	$\chi^2= 37.2$, $p^*= 0.000$, $df=4$	
Levonorgestrel (Dedicated product of EC contains)	14 (38.9)	32 (88.9)
	$\chi^2= 20.5$, $p^*= 0.000$, $df=3$	
0.75 mg levonorgestrel (Dedicated product of EC contains -- mg levonorgestrel)	15 (41.7)	28 (77.8)
	$\chi^2= 19.2$, $p^*= 0.000$, $df=4$	
Drug regimen (schedule of intake)	15 (41.7)	36 (100)
	$\chi^2= 29.6$, $p^*= 0.000$, $df=3$	
Timing about when can be given in menstrual cycle	19 (52.8)	32 (88.9)
	$\chi^2= 13.4$, $p^*= 0.009$, $df=4$	

(*p – highly significant)

Table 2 gives the details regarding the time window for taking the EC pills, dedicated product, contents, schedule of intake and timing about when it can be given in the menstrual cycle. There was a significant improvement in post-training as compared to pre-training. The time limit for insertion of Cu-T was mentioned correctly by only 16.7 per cent of the MOs in the pre training which is quite lower than that observed by S. Singh et al ⁷ who reported it to be 45 per cent among the doctors in their study. In the present study, in the post-test, 58.3 per cent of respondents were aware of the correct use of IUD which needs to be improved further.

TABLE 3
PERCENTAGE OF MOs GIVING CORRECT IN-DEPTH
KNOWLEDGE ABOUT EC (N= 36)

In-depth Knowledge	Pre-training No. (%)	Post-training No. (%)
Mode of action	7 (19.4)	20 (55.6)
	$\chi^2= 11.2, p^* = 0.004, df=2$	
What should be done if vomiting within 2 hrs of taking EC	19 (57.6)	35 (97.2)
	$\chi^2= 19.0, p^* = 0.000, df=2$	
Advice if pregnant (continue the pregnancy)	3 (8.3)	27 (75.0)
	$\chi^2= 33.5, p^* = 0.000, df=2$	
Contraindicated – missed period	7 (19.4)	21(58.3)
	$\chi^2= 13.7, p^* = 0.003, df=3$	

(*p – highly significant)

Table 3 shows a significant improvement in the in-depth knowledge in post-training as compared to pre-training. In the present study the providers showed a significant improvement in correct knowledge about contraindications which increased from 19.4 per cent in pre-training to 58.3 per cent in post-training. In the present group though missed period was mentioned correctly as a contraindication by 58.3 per cent of MOs in the post-training, 28.6 per cent and 11.4 per cent of MOs mentioned heart disease and hypertension respectively as contraindications in the post training. This shows the need to (i) further educate the providers about contraindications of EC and (ii) lay more emphasis on ‘no contraindications’ to EC so as to encourage women to adopt it for controlling pregnancy.

Majority i.e. 97.1 per cent of the MOs were aware that EC pills do not give protection against HIV/AIDS in pre-training which showed a marginal increase in post-training (97.2%).

TABLE 4
PERCENTAGE OF PHNs HAVING BASIC KNOWLEDGE
ABOUT EC (CORRECT RESPONSE) (N= 141)

Correct Response	Pre-training No. (%)	Post-training No. (%)
What is EC?	20 (14.2)	117 (83.0)
	$X^2= 151$, $p^*= 0.000$, $df=2$	
Indications		
Unprotected intercourse	22 (15.6)	100 (70.9)
	$X^2= 87.8$, $p^*= 0.000$, $df=1$	
Breakage/slippage of condom	7 (5.0)	86 (61.0)
	$X^2= 100.1$, $p^*= 0.000$, $df=1$	
Forgotten OC pills	6 (4.3)	84 (59.6)
	$X^2= 101.2$, $p^*= 0.000$, $df=2$	
Rape/sexual assault	18 (12.8)	89 (63.1)
	$X^2= 77.9$, $p^*= 0.000$, $df=2$	

(*p – highly significant)

A statistically significant improvement in the level of knowledge about basic aspects and indications of EC in post-training as compared to pre-training was observed (Table 4).

TABLE 5
PERCENTAGE OF PHNS GIVING CORRECT RESPONSE ABOUT TIMING,
REGIMEN AND MODE OF ACTION OF EC PILLS (N= 141)

Time Window for Effectiveness	Pre-training No. (%)	Post-training No. (%)
EC pills	16 (11.3)	122 (86.5)
	$X^2= 161$, $p^*= 0.000$, $df=5$	
IUD	52 (36.9)	117 (83.0)
	$X^2= 77.2$, $p^*= 0.000$, $df=4$	
Drug regimen (schedule for intake)	32 (22.7)	129 (91.5)
	$X^2= 144.3$, $p^*= 0.000$, $df=4$	
Mode of action	14 (10.0)	109 (77.3)
	$X^2= 162.0$, $p^*= 0.000$, $df=2$	

(*p – highly significant)

A significant improvement in the level of knowledge about time window for effectiveness for EC pills and the IUD, drug regimen and mode of action was

observed (Table 5). Awareness of the mode of action among PHNs increased to 77.3 per cent in the post-training from 10 per cent in the pre-training. However, the PHNs would need more training on this aspect.

TABLE 6
PERCENTAGE OF PHNs GIVING CORRECT RESPONSE WHEN ASKED
ABOUT CERTAIN MYTHS AND MISCONCEPTIONS ON EC (N= 141)

Correct Response	Pre-training No. (%)	Post-training No. (%)
Do these pills lead to abortion?	65 (46.1)	132 (93.6)
	$\chi^2= 79.3, p^*= 0.000, df=2$	
Protection against HIV/AIDS	77 (55.0)	133 (95.0)
	$\chi^2= 60.8, p^*= 0.000, df=2$	
Do this pills cause harm if given to breast feeding mothers?	46 (32.9)	125 (88.7)
	$\chi^2= 97.5, p^*= 0.000, df=2$	

(*p – highly significant)

Training played a crucial role in dispelling myths and misconceptions on EC (Table 6). This is very important as unless we equip these health workers with correct knowledge, wrong messages can percolate down in the community which can affect the utilization of EC pills.

CONCLUSION

There was a significant improvement in the level of knowledge among both the groups in post-training as compared to pre-training on basic aspects of EC, availability of a dedicated product, its timing of administration, dosage, drug regimen and mode of action. Myths and misconceptions on EC (such as whether EC pills lead to abortion and do these pills cause harm if given to breast feeding mothers) were also clarified and they were reduced in post-training as compared to pre-training. However, certain gaps remained for further improvement among the service providers on certain aspects such as correct knowledge about contraindications for EC pills, IUD as an EC method and mode of action of EC which can be improved further. These can be dealt with by providing refresher training to the service providers at regular intervals; including interactive training mechanisms such as role-plays. This can be done after they have gained some experience by prescribing EC pills.

Acknowledgements

The authors acknowledge the encouragement received from Indian Council of Medical Research (No. NIRRH/MS/14 2006). They are also thankful to Dr. Chander Puri, Director, NIRRH and Dr. Surekha Mehta, Special Officer, Family Welfare and MCH, Municipal Corporation of Greater Mumbai for co-ordination of the training programme.

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INJECTABLE DEPOT MEDROXYPROGESTERONE – A SAFE AND AN EFFECTIVE CONTRACEPTION FOR AN INDIAN SETTING

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ABSTRACT

The findings reveal that (i) the mean age of 80 women who accepted DMPA for contraception was 26.6 years; (ii) seventy one per cent of the women were primiparous and 51.5 per cent were post-partum while 22 per cent enrolled after an abortion; (iii) discontinuation rate after 1–2 injections was 43 per cent, the most common reason being irregular bleeding; (iv) women found it useful for short-term contraception (3-6 months) prior to opting for sterilization or when their spouses were visiting for a short time; (v) there were no pregnancies during this study for 669 user months; (vi) continuation rate was high in post-partum women and it did not affect their lactation; (vii) maximum time taken for return of menstruation was 7 months after stopping DMPA; and (viii) sixty five per cent of acceptors who completed the study said they would recommend this method to others because of convenience and privacy. The authors conclude that DMPA is an effective and useful contraceptive

Key Words: DMPA (Depot-Medroxyprogesterone), Contraception, Long-acting injectable contraception, Progesterone only contraception.

Search for an ideal contraceptive that is safe, effective, with minimum side effects and less frequent administration has been going on for decades. Long acting injectable contraception is one of the several methods available world over for spacing pregnancies. Though it has been used by more than 16 millions of women in over 130 countries, there has been a lot of controversy associated with its use¹. It is effective and like any other method it has a few contraindications and side-effects. It is popular in some countries like South Africa where 55 per cent of the current users of modern methods prefer DMPA. In other developing countries percentage of users vary from 21 per cent in Bangladesh to 49 per cent in Indonesia². However, it has not been a popular method in India and is

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not included in the national family planning programme. Hence, an attempt has been made here to study the use and acceptance of injectable contraception in our setting.

MATERIALS AND METHOD

The present study was a prospective study conducted on 80 women who attended the hospital for contraception. They were post-partum, post-abortion or women seeking contraception in the interval period. Approval for the study was obtained from scientific and ethical review boards and consent was taken from the participants. Exclusion criteria included: hypertension, diabetes, liver disorder and vaginal bleeding of unknown etiology.

Women were counselled and a detailed physical and gynaecological examination was done. Injection Depot Medroxy Progesterone Acetate (DMPA) 150 mg was given deep intramuscular in the upper lateral gluteal region using 23-24 gauge needle. The schedule consisted of injection within day 5 for menstruating women, within day 7 for post-abortion women and 6 weeks post-partum for recently delivered women. Subsequent injections were given at three monthly intervals. All women were followed-up for one year after the first injection for pregnancy rate, side-effects, discontinuation and patient satisfaction. After four injections at the end of one year, users were followed-up to see the onset of normal menstrual cycle. Statistical analysis was done using the chi-square test for trend and a p value ≤ 0.05 was considered significant.

RESULTS

Eighty eligible women were recruited for the study in two years. The average age of women was 26.6 years (18-36 years). Seventy three per cent of the women were primipara while the remaining 27 per cent were multiparous. Fifty one per cent of the respondents were post-partum while the rest were either post-abortion or interval users. Forty-six women completed the study by taking all the four injections as planned while 34 women discontinued after one or two injections. Table 1 shows the patient characteristics. Majority of these women had completed secondary level of education. However, educational status did not influence the continuation rate.

Table 1
PATIENT CHARACTERISTICS (N=80)

Mean Age	Education		Parity		Time of Injection	
26.6 (18 -36 years)	Primipara	72.5%	Postpartum	51%	Primary	30%
	Multi para	27.5%	Post-abortion	22.5%	Secondary	53.7%
			Interval	26.5%	Graduates	16.3%

There were no pregnancies in 669 total women months of exposure. Hence the efficacy was 100 per cent. DMPA was chosen for two women with medical problems. One user had epilepsy while another was on anti-tuberculous drugs following medical termination for an unplanned pregnancy.

Table 2 shows the important side-effects of this contraception. Irregular bleeding (70%) (CI = 60-80) and amenorrhoea (65%) (CI = 55-75) were the most common side-effects. Irregular bleeding was not heavy but continued spotting on and off which affected the socio-cultural practices. No user had profused bleeding during this study. Minor complaints like headache, dyspaerunia and backache, though present but did not prompt discontinuation.

TABLE 2
REPORTED SIDE-EFFECTS (N=80)

Side-effects	No	Per Cent
Irregular Spotting PV	56	70
Amenorrhoea	52	65
Mood Changes	5	6.3
Weakness	3	3.8
Scanty Periods	5	6.3
Miscellaneous*	3	3.8
Erythema Nodosum	1	1.3

* Backache, Headache, Dyspaerunia- 1 each

Blood pressure changes were studied in 46 women who received all the four injections. Only two women showed a mild increase in blood pressure, which was not more than 15 mm systolic and 10 mm diastolic. The weight gain in the women at the end of one year was not very significant. Mean weight gain was 1.4 kgs. which could not be attributed to DMPA alone.

Reasons for discontinuation of DMPA are depicted in Table 3. Irregular spotting P.V. was number one reason for discontinuation of DMPA (44%) followed by amenorrhoea (11.7%), weakness and husband away (5.9%) each and tubectomy and Erythema Nodosum 29 per cent each. In some cases 'spouses insistence' (14.7%) was one of the reasons for discontinuation of DMPA (Table 3).

TABLE 3
REASONS FOR DISCONTINUATION (N=34)

Reasons	Number	Per Cent
Irregular Spotting PV	15	44.1
Amenorrhoea	4	11.7
Erythema Nodosum	1	2.9
Weakness	2	5.9
Tubectomy	1	2.9
Plan Conception	4	11.7
Spouse's Insistence	5	14.7
Husband Away	2	5.9

Table 4 shows amenorrhoea in relation to the number of injections taken in 46 women who took all the four injections over the course of one year. Total amenorrhoea was obtained after three injections in 50 per cent while 70 per cent required four injections for the same.

Table 4
AMENORRHOEA IN RELATION TO
NUMBER OF INJECTIONS (N=46)

No of Injections	Amenorrhoea	Per Cent
After 1	8	17
2	18	39.1
3	23	50
4	32	70

Chi square for trend 30.33, p value < 0.0001

Irregular bleeding progressively lessened with subsequent injections and the number of days of spotting per month progressively reduced. But most of the discontinuations were after one or two injections when the average number of days of spotting was 10.9 and 6.1 days respectively. It is interesting to note that three users continued to have regular menstruation during the entire period of study.

TABLE 5
IRREGULAR VAGINAL SPOTTING IN RELATION TO NUMBER OF INJECTIONS
AND MEAN NUMBER OF DAYS OF SPOTTING PER MONTH

No of Injections	No of Women	No of Women with Spotting	Per Cent	Mean No. of Spotting Days Per Month
1	80	56	70	10.9
2	51	30	58.8	6.1
3	46	20	43.4	2.8
4	46	11	23.9	2

Chi square for trend 27.22, p value < 0.0001

The time of taking the injectable with respect to whether the women were in the post-partum, post-abortion or interval period did make any difference to the continuation rate. ($p=0.0004$). Post-partum women seemed to have a lesser rate of discontinuation compared to those in the interval period. Sixty four women were followed-up, for return of regular menstruation after stopping the injectable. The maximum time taken for return of menstrual cycles was seven months, the minimum being two months. At the end of six months, more than 90 per cent had resumed their menstrual cycles. The number of injections did not affect the return of menstrual cycles. On an average, it took 5, 5.4 or 5.2 months for return of menstruation in women taking one, two or four injections respectively. Three women who discontinued DMPA after one injection, had come for termination of pregnancy within six months of discontinuation with an unplanned pregnancy.

DISCUSSION

Depot medroxyprogesterone acetate as an injectable contraceptive is highly effective, safe and convenient. An important advantage of this injectable is that it requires minimal patient compliance with an easy three monthly administration schedule. In this study of 669 women months of exposure, no

pregnancies occurred. The Pearl Index and life table analysis calculated were thus zero. DMPA has very low failure rates (0.3-0.7 /100 women years) comparable to that of implants and female sterilization^{3,4}

Compliance with DMPA use, however, continues to be limited by its side-effects, such as disruption of menstrual cycles. In this study, 70 per cent of the women had irregular vaginal spotting and this was cited as the reason for discontinuation by almost 45 per cent of these women. There were no reports of heavy bleeding in our study. This is seen only when post-partum injections are started soon after delivery whereas in our study post-partum dose was administered after six weeks of delivery.⁵ About 33 per cent of women with irregular bleeding agreed to continue after counselling. The average number of days of spotting does come down progressively with each injection.

Among the acceptors, 65 per cent developed amenorrhoea with DMPA which resulted in discontinuation in 11.7 per cent of these women. However, amenorrhoea is beneficial in women with anaemia, menorrhagia and dysmenorrhoea. There were two cases who had accepted DMPA for contraception after having been treated for post-partum and post-abortal haemorrhage requiring multiple transfusions. Both of them were happy with the amenorrhoea and wanted to continue this method beyond the study period. Amenorrhoea caused by DMPA is reversible contrary to misconceptions.

Weight gain did not seem to bother our women as it was only marginal and could not be attributed to DMPA alone. As this was not a controlled study, it is difficult to know whether it is DMPA related. There was no discontinuation due to weight gain. There was no difference in weight gain in a study conducted in Thailand comparing DMPA with IUD users.⁶ There has been no significant effect on blood pressure of the women in the study.

In post-partum women, lactation remained unaffected. Most studies have shown an increase or no effect on milk volume, without any effect on quality of breast milk in terms of nutrition.^{5,7}

The discontinuation rate in the study was 42.5 per cent, whereas, others have reported a rate as high as 70 per cent⁸. All the discontinuations reported in the study was either after 1st or 2nd injection when the menstrual irregularities were at their peak. Many of the women under study did observe that this unscheduled bleeding interrupted their social and religion related activities.

Among the women who discontinued, it was found that 14.7 per cent of women were influenced by their spouse against the injectable, and 5.88 per cent were visited by their husbands only for a short while. The reasons for discontinuation indicate that DMPA can be used by women for a short period without problems of daily intake and it is easy to discontinue. The privacy of the method was an added advantage.

In this study, women who had received DMPA in the post-partum period seemed to accept it better. This is evident from the fact that 67.3 per cent of the women who had completed the four injection schedule had received DMPA in the post-partum period. This is because menstrual irregularities and amenorrhoea are common in breast feeding women and therefore they are better accepted. The continuation rate for post-partum women has been similar in another study in Mumbai where it was 60 per cent for the post-partum group while it was 24 per cent for the post-abortal group.⁹ Most women whether fat or thin, at any age, and even smokers can use DMPA safely and effectively. As it does not have estrogenic side-effects contraindications are less compared to combined pills⁵. It is an ideal contraceptive for women with some medical disorders like epilepsy and sickle cell anaemia. Legardy et.al. in a systematic review concluded that injectables are safe and users experienced a decrease in clinical symptoms and sickle cell crisis compared to non-users.¹⁰ DMPA also appears to have intrinsic anti-convulsant activity³. Even for women on anti-tuberculous drugs it is better than combined pills as it does not induce liver enzymes. DMPA has many other non-contraceptive benefits such as prevention of endometrial cancer, ectopic pregnancy, dysmenorrhoea and in management of endometriosis⁴.

Despite all its advantages it has not been included in the National Family Planning Programme in India. WHO and USFDA have approved the drug for contraception though women's groups and health activists in India continue to oppose it. They highlight the adverse health impact without considering the health benefits of this contraception. It has been licensed for use since 1993. Women's groups have submitted recommendations to the Ministry of Health and Family Welfare highlighting the adverse impacts and some concerns even contrary to scientific justification¹¹. They note that breast feeding is a contraindication to DMPA while according to scientific and medical data DMPA is one hormonal contraception which does not interfere with lactation. The fear of anaemia due to irregular bleeding in an anaemic population is unfounded. The bleeding though irregular is scanty and rarely heavy only when the first injection is given in the first

week of puerperium.⁷ The ideal time to start the injection is after six weeks of delivery. Many studies have clearly shown that DMPA is beneficial in improving anaemia.¹² Concerns regarding osteoporosis and risk of breast cancer, have been addressed by several studies including a multi-centre study by WHO^{13,14}. There is no direct link between long-term users of DMPA and breast cancer while in recent users it may trigger the growth of existing breast tumours rather than cause cancer. This has been even shown in South Africa where DMPA has been used extensively and for longer durations, than anywhere else in the world¹⁵. Use of DMPA is not associated with increases in procoagulant factors and WHO has concluded there is no increased risk of venous or arterial events with these injectable progestins.⁴ Gbolade et al studied bone mineral density in long-term users of DMPA (1-16 years) in 155 women aged 17-52 years and found no clinically important adverse effect on bone¹⁶. Therefore they didn't recommend bone conserving measures such as add back estrogen and this despite the fact that they included only women with amenorrhoea and low estradiol levels. Moreover bone loss here is reversible after stopping the injectable. In 1997 WHO changed the category of DMPA from WHO class 1 to WHO class 2 stating that benefits still outweigh the risks in adolescents.^{2,12} In a prospective cohort study adolescent mothers on DMPA had a higher continuation rate with lower incidence of repeat pregnancy at 12 months compared to oral contraceptive users¹⁷. Risks of unwanted pregnancy, abortion and delivery in developing countries for women in the low socio-economic group are higher than the side-effects of injectable contraception.

With proper selection of clients, thorough counselling, appropriate timing of injections and good supportive care, acceptance and continuation will increase. Standardised protocols for counselling, periodic orientation for providers, diligent follow-up and surveillance for side-effects are some of the suggestions to sustain and continue DMPA contraceptive programme¹. In Mexico, the continuation rate was high in women who had received in-depth counselling compared to women who received only routine counselling and some general information about DMPA in the first visit. In-depth counselling consisted of detailed information of the drug along with emphasis on how to handle the side-effects and this was given at each reinjection visit every three months. As a result at the end of one year only 6 per cent discontinued in this group compared to 27 per cent in the routine counselling group.¹⁸

In the present study, women who had taken four injections were asked reasons for continuation and also whether they would recommend DMPA to

others. Sixty five per cent said they would recommend because of convenience and another 17 per cent liked it because the hassles of daily intake like combined pills was not there and unlike barrier method it is coitus independent. Twenty six per cent preferred it for the privacy.

Use of DMPA has no permanent impact on fertility. However there is a slight delay in conception compared to combined pills or intrauterine contraceptive device users. Long-term DMPA use does not cause any cumulative impairment of fertility, as evidence has shown no difference in return of fertility between long-term and short-term users⁴. The limitations of the study are that the long-term implications of DMPA and the time taken for return of fertility have not been studied. However, three women who discontinued after one injection returned within six months for termination of an unwanted pregnancy. Another important limitation of this study is that it is not a randomized controlled study.

There is no ideal contraceptive for women of all ages. Preferences and requirements change with age and stage of life. If many methods are available for women to choose, fertility regulation will be enhanced. If this is not offered to women in the national programme, rural poor women cannot have this choice which has certain advantages. Since it is available in the country, women who can afford, buy it and women who cannot afford have limited options and therefore the cycle of unwanted pregnancy with its morbidity will continue. Anticipating misuse, abuse, absence of monitoring facilities in the public sector cannot be the reasons for depriving poor sections of the society of an effective contraceptive. It is the duty of any responsible government, its citizens and health activists to improve the standards of family planning and public sector facilities. Female sterilisation is the most popular method in India but it is a known fact that women with young infants accept or coerced to undergo the same which they regret later. Targeting poor women in the present family planning programme with a permanent method like tubectomy is worse than using a reversible effective contraception like injectable DMPA. A woman has the liberty to opt out of the method by simply not taking the injection while no such choice exists with tubectomy. In fact another important advantage of DMPA is that during reinjection visits, women can be screened for other conditions and a periodic monitoring of their general health and immunizations of their babies can be done. The often quoted low use-effectiveness in field conditions is due to poor patient selection and inappropriate timing of the injection rather than the injection itself.¹⁹ In developing countries with high infant and perinatal mortality rate, it is wise to defer permanent method till the

children are a little older and the chances of survival are better. It is in circumstances like these, the DMPA can be used.

CONCLUSION

The study concludes that DMPA is very effective contraceptive and convenient to use due to its convenient dosage schedule. Without a high degree of motivation, women can take because it need not be taken every day. However, side effect like irregular bleeding limits the use of DMPA. It has no effect on lactation in post-partum women.

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LEVEL OF REPRODUCTIVE HEALTH AWARENESS AND FACTORS AFFECTING IT IN A RURAL COMMUNITY OF SOUTH INDIA

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ABSTRACT

Enhancing health awareness among women in India is a challenging task. A cross-sectional study of 624 women aged 13-49 years from 532 households belonging to two health sub-centre areas in North Tamil Nadu was done to examine the level of awareness and the different factors affecting awareness on reproductive health issues like safe sex, reproductive tract infection, safe age to bear children and types of family planning methods. Apart from educational status, which was significantly associated with awareness on all the four reproductive health issues studied, other factors like place of residence (an easily accessible area - SC-1 or not easily accessible area - SC-2), age group and standard of living were significantly associated with awareness on family planning methods and reproductive tract infection. Only 9.5 per cent of the adolescents interviewed had knowledge on safe sex. Adolescents age 15 years and above, belonging to an extended family with educational status of above 5th grade, working outside home and having a high standard of living had significantly more awareness on safe sex. 79.5 per cent women aged 13-49 years knew it was unsafe to bear children before 20 years. Age, marital status and place of residence were significantly associated with awareness. Hence, this study shows that adolescents (<19 years), women who are illiterate or educated less than grade 10 and living away from basic health care services with a low standard of living are less aware of reproductive health issues and need targeted interventions for reproductive health messages.

Key Words: Family planning methods, Reproductive health infection, Safe sex, Safe age to bear children

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Awareness of women regarding reproductive health problems certainly helps in prevention and control of those problems. It is a challenging task to raise awareness regarding reproductive health care issues in women because of the social standing of women which distances them from the right source of information and also because of the taboos regarding the discussions on issues like safe sex, unsafe sexual practices etc. The awareness of Indian women on family planning methods has steadily risen up in the last decade as noted by the national surveys ^{1,2}. However, smaller scale studies have revealed a dismal level of awareness on other reproductive health issues like safe sex and reproductive tract infection ^{3,4}. It has been noted that women tend to regard RTI symptoms as normal discomfort and therefore often they do not seek treatment⁵. A number of KAP studies conducted in different parts of India reveal a widespread ignorance and misconceptions among students regarding HIV/AIDS ⁶⁻⁹. The level of awareness on HIV/AIDS among women has been reported to be far better in Tamil Nadu as compared to the national average¹⁰. Better health awareness affects the health seeking behaviour of the individuals and the compliance with the suggested treatment. The power to demand better quality services arises from informed individuals and hence forming a part of the vicious circle that would help in enhancing the quality of health care services. Awareness regarding reproductive health issues would raise participation and involvement with understanding about individual and community rights. This would go a long way in improving utilization of services and demand for high quality care. Though education is known to be an important factor for raising health awareness but other socio-cultural and economic factors too can influence awareness regarding health issues. This study aims to find out the level of awareness of the respondents on reproductive health issues like knowledge regarding safe sex, reproductive tract infection, safe age to bear children and knowledge of specific family planning methods. The study also attempts to find out the characteristics of women which are associated with the level of awareness.

MATERIALS AND METHOD

This study was conducted in Porur Primary Health Centre area of Tiruvallur district in Tamil Nadu. Data were collected from May 2001 to August 2001. For health administrative purposes Porur belongs to Poonamalee Health unit district. This is an upgraded 24-hour PHC with a population of 1,20,000 and divided into 13 sub-centre areas. The implementation of the reproductive health approach was started in 1998 in this area. Two sub-centres from this PHC were

selected for the study. The two sub-centres differed markedly from each other not only with respect to socio-economic status of the people but also with respect to other factors like accessibility of the area and infrastructure of the sub-centre. While sub-centre -1 (SC-1) had more number of people belonging to socially other backward community (69%) and forward community (9%) sub-centre-2 had a substantial population of migrant brickkiln workers who mostly belonged to the scheduled caste/tribe (77%).

300 households were sampled from each sub-centre using the systematic random sampling technique. A complete listing of all the households in both the areas was done village-wise. The listing mainly involved identifying all households in the area. Some basic details of the households along with the total number of women aged 13-49 (who were members of the households) were recorded using the household listing form. The selected households were visited after informing the head of the household about the intentions of the investigator in doing this study and obtained consent. The questionnaires were orally administered to all the women in the household, within the age group 13–49 years. On an average 10-12 households were interviewed in a day. 532 households (89% coverage) could be interviewed. The remaining households were locked and could not be revisited for logistic reasons.

The women were questioned regarding the knowledge about various family planning methods, safe sex, age for marriage and awareness of reproductive tract infections. Also, information of the household was ascertained on their religion, caste, occupation, education, type of house, drinking water source, sanitation, kitchen for cooking, agricultural land owned, source of electricity, fuel used for cooking and list of other materials owned. To get a reasonably good approximation to the economic status of the household, the standard of living was ascertained through an index termed as standard of living index (SLI)¹¹. It is a summary index derived on the basis of assigning weights to materials owned and other items according to its economic value and importance¹¹.

Data were entered on the EPED questionnaire format in EPI6. The analysis was done using SPSS (Statistical Package for Social Sciences) software. A frequency distribution to assess the level of awareness followed by a bivariate analysis of awareness on the four reproductive health issues with the individual background characteristics of women was done. The test of significance was applied to note the significant associations.

FINDINGS AND DISCUSSION

Awareness on Specific Family Planning Methods

Knowledge of family planning (F.P.) methods among currently married women age 13-49 years was studied (Table 1). Ninety two per cent (95.0% in SC-1 and 88.4% in SC-2) women know at least any one method of family planning, 63.9 per cent (70.6% in SC-1 and 57.3% in SC-2) know about any spacing method. Awareness was highest for female sterilization (79.1%). IUD was known to 55.7 per cent and oral pill was 37.0 per cent. Only 21.7 per cent (29.0% in SC-1 and 14.5% in SC-2) knew about condom. The knowledge on male sterilization was very low (16%) (20.2% in SC-1 and 12.0% in SC-2). In addition to these methods of contraception, knowledge on natural methods like rhythm and withdrawal was dismal, only one per cent. Very few women knew about other modern contraceptives like injectables, non-steroidal oral contraceptives and emergency contraception.

A significant difference in the knowledge about family planning methods was observed between the two sub-centers. Women in SC-1 were better informed about family planning methods compared to SC-2.

With respect to characteristics of women, significant differences were observed in the level of knowledge of family planning methods. The knowledge on family planning methods was higher among women aged 25-34 years (95.6%) compared to both 20-24 (86.2%) and 35-49 (91.9%) years. Knowledge of spacing methods was also highest among women aged 25-34 years (71.1%) compared to 20-24 years (63.2%) and 35-49 years (56.9%). This reflects an unmet need for information on spacing methods among women aged 20-24 years who need them the most. A highly significant association between caste of women and knowledge of family planning methods was observed. The knowledge about modern spacing methods was only 57.7 per cent among women who belong to scheduled caste compared to 73.1 per cent among women of forward castes. It was interesting to note that women living in nuclear families were better informed about family planning methods as compared to women of extended families. The educational status of women and level of knowledge of family planning methods were significantly associated, and it was observed that the difference in the level of awareness according to educational status of women was higher with respect to knowledge regarding spacing methods. Ninety per cent of women who had education up to grade 10 or above had knowledge about any of the modern

spacing methods compared to only 50.4 per cent among illiterates or those who have not completed grade 5. Significant differentials by occupation of women were also noticed. Standard of living was strongly associated with knowledge on family planning methods. Among women having low standard of living, only 56.1 per cent knew about any modern spacing methods compared to 76.5 per cent among women having high standard of living.

Awareness about Safe Age to Bear Children

Two questions were asked to elicit the knowledge about safe age to bear children. Firstly, all women aged 13-49 years (n=624) were asked to report the safe age to bear child, and secondly 'do you think bearing a child below age 20 years as safe?' The analysis of these two questions is shown in Table 3.

Overall, 79.5 per cent of women aged 13-49 years reported that bearing child before age 20 years as unsafe. Surprisingly, more women (81.9%) belonging to scheduled castes/tribes felt bearing child before age 20 years as unsafe compared to women belonging to forward castes (69.7%). One in four illiterate women reported that child bearing before age 20 years as safe compared with one in seven among those educated up to grade 10 or above. Similar, significant positive association was found in case of standard of living as well.

Only, 3.8 per cent of women aged 13-49 years reported that bearing child before age 18 years as safe. Twenty one per cent felt that 19-20 years as safe age to bear children, 40.1 per cent felt it as 21-22 years, and 16.3 per cent felt it as safe at 25 years and above. About eight per cent reported that, they don't know about the safe age for bearing a child. Significant differentials were noticed in the reporting of safe age to bear child according to characteristics of women. Surprisingly higher proportion (48.0 %) of young adolescent girls (13-14 years) have not reported any safe age for bearing a child. More women aged 20-24 years reported safe age as above 20 years compared to older and younger age groups. Differentials in the reported safe age was substantial with respect to marital status of women (Table 3).

It was important to note that, only 2.9 per cent of women who live in nuclear families reported safe age to bear children as 18 years or below compared to 6.3 per cent among those who live in extended families. Similarly, more illiterate women (6.7 %) and those working as labourers (6.5 %) felt child bearing at age 18 or below as safe, compared to those educated up to class 10 or more

(1.6 %) and not working (3.5 %). Surprisingly, no significant difference in the reported safe age to bear children was observed among SLI groups.

Awareness about Reproductive Tract Infections (RTIs)

Knowledge regarding reproductive tract infection (RTI) was asked from all ever married and menstruating never married women aged 13-49 years (n=613), and the results are presented in Table 2. Only 15.8 per cent (24.2% in SC-1 and 7.9% in SC-2) had knowledge about RTI, and of those who knew about RTI, 81.4 per cent (80.6% in SC-1 and 84.0% in SC-2) said that it could be prevented.

The knowledge about RTI varied substantially across different sub-groups. Only 8.3 per cent of adolescent women (age 13-19 years) had knowledge about RTI compared to 19.6 per cent among women aged 25-34 years. Women belonging to Christian community and forward castes were more aware of RTI compared to Hindus and scheduled castes/tribes, respectively. A significant positive relationship between standard of living and awareness about RTI was observed. Five per cent of women having low standard of living knew about RTI compared to 32.0 per cent among high standard of living. As expected, awareness of RTI among illiterate women was very low compared to literate women. Only five per cent illiterate women or had studied less than 5th standard knew about RTI compared to 38.0 per cent among those who had studied up to 10th standard or more.

The differentials in the level of knowledge about RTI according to occupational status of women were substantial. Only, 1.3 per cent women among those who work as agricultural/casual labourer had knowledge about RTI compared to those who were not working (19.1%). Among students the level of knowledge about RTI was only 16.0 per cent.

Awareness about Safe Sex

All un-married adolescent (13-19 years) girls were asked about the knowledge about safe sex, and to identify methods such as 'taking steps to avoid STD', 'taking steps to avoid pregnancy', and 'steps to avoid both STD and pregnancy' as safe sex or not. Only, 9.5 per cent adolescents had knowledge or had heard about safe sex (Table 4). It was interesting to note that, adolescents living in extended families were more likely to have heard about safe sex compared to those living in nuclear families, 18.2 and 5.1 per cent respectively. A

significant and positive association between educational level and standard of living with the level of knowledge about safe sex was observed. 7.4 per cent identified safe sex as 'taking steps to avoid STD', and 2.4 per cent said 'taking steps to avoid pregnancy' as safe sex.

Quality of health care services was closely linked with the rights of all individuals and couples to receive information on issues related to health matters¹². The low level of awareness of reproductive health issues among women suggests the need for revamping the IEC system at the community level in the study area. Almost 79.5 per cent of women knew teenage pregnancy is unsafe and 80 per cent said 20-25 years to be the safe age for child birth. A dismal 9.5 per cent of adolescents knew about safe sex. Studies from across India have also reported varied level of awareness on HIV/AIDS among school going adolescents. But common among these reports was that though many of them have heard about HIV/AIDS but their awareness about modes of transmission and practise of safe sex was dismal¹³. The findings of national survey showed that there had been a tremendous improvement in the level of awareness on HIV/AIDS in Tamil Nadu and increased about four-fold from just 23 per cent in 1992 to 87 per cent in 1999¹⁰. The socio-economic factors significantly associated with knowledge about safe sex were age group, type of family, occupation and standard of living. Adolescents age 15 years and above, belonging to an extended family with educational status of above 5th grade, working outside home and having a high standard of living had significantly more awareness about safe sex.

Though 91.6 per cent of women knew about any one family planning method, only 68.5 per cent had some knowledge on spacing methods. Choice of family planning methods had been identified as an important component of quality of family welfare programme and having a choice of methods was both a practical and philosophical commitment to respond to the user's needs¹⁴. Practically, providers must carefully plan how to provide alternative technologies to clients. Philosophically, the availability of multiple methods reaffirms the programmes goal of service to the individuals need for effective contraception, not the promotion of a given method¹⁴. The very narrow choice of methods, women have on their hands, as indicated by the low level of awareness about modern methods brings out the fact that we still have a long way to go to achieve a state of responding to the diverse needs of women.

On examining the association between socio-economic factors and the level of awareness on reproductive health issues, it became evident that education

was an important factor for awareness on all the four reproductive health issues studied. While the influence of different level of educational status on awareness regarding sterilization method was not much, awareness regarding modern spacing methods was significantly affected by educational status of women. However other factors like occupation of the women, place of residence (SC-1 v SC-2), age group and standard of living also were significantly associated with awareness on family planning methods.

This study shows that age group of women, education, occupation, place of residence and standard of living were major factors affecting awareness on reproductive health issues. Adolescents (<19 years), women who were illiterate or educated less than grade 10 and living away from basic health care services with a low standard of living and casual labourers were less aware about reproductive health issues and need targeted interventions for reproductive health messages.

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TABLE 1
PER CENT OF CURRENTLY MARRIED WOMEN AGED 15-49 YEARS BY SPONTANEOUSLY REPORTED
KNOWLEDGE ABOUT SPECIFIC FAMILY PLANNING METHODS, ACCORDING TO SELECTED CHARACTERISTICS

Characteristics	Per cent of currently married women aged 15-49 years knew about										Number of women
	Condom	Pill	IUD	Female sterilisation	Male sterilisation	Rhythm	Withdrawal	Other	Any method	Any modern spacing method	
Age (in years)**											
15-19	(14.3)	(21.4)	(35.7)	(50.0)	(7.1)	(0.0)	(0.0)	(0.0)	(57.1)	(35.7)	14
20-24	17.2	36.8	55.2	65.5	11.5	1.1	0.0	9.2	86.2	63.2	87
25-34	28.0	44.0	62.8	83.9	20.6	1.8	0.9	4.1	95.9	71.1	218
35-49	16.3	28.8	48.1	82.5	13.1	0.0	1.3	5.0	91.9	56.9	160
Religion											
Hindu	20.0	36.1	53.0	78.0	15.8	1.0	0.7	5.0	90.3	61.9	404
Christian	29.0	38.7	69.4	83.9	12.9	1.6	1.6	6.5	98.4	74.2	62
Caste/tribe											
Scheduled caste/tribe	17.6	32.2	50.2	80.2	13.2	0.0	0.4	5.7	90.3	57.7	227
OBC	22.4	39.5	60.5	76.7	15.2	2.2	0.4	5.4	92.8	69.5	223
Other	50.0	57.7	65.4	88.5	46.2	0.0	7.7	0.0	92.3	73.1	26

Characteristics	Per cent of currently married women aged 15-49 years knew about										Number of women
	Condom	Pill	IUD	Female sterilisation	Male sterilisation	Rhythm	Withdrawal	Other	Any method	Any modern spacing method	
Type of family											
Nuclear	20.5	35.8	55.8	79.2	14.5	1.2	1.2	4.9	92.5	65.0	346
Extended	24.6	40.0	56.2	78.5	20.0	0.8	0.0	6.2	89.2	61.5	130
Education**											
Less than grade 5	8.7	22.7	42.1	80.2	7.4	0.8	0.0	2.9	88.8	50.4	242
Grade 5-9	27.1	46.5	61.1	78.5	19.4	0.7	0.7	6.9	94.4	71.5	144
Grade 10 +	48.8	61.6	84.9	76.7	33.7	2.3	3.5	9.3	95.3	89.5	86
Occupation**											
Agricultural/casual labour	3.3	18.3	33.3	78.3	8.3	0.0	0.0	3.3	85.0	41.7	60
Other work	20.0	38.0	50.0	82.0	24.0	6.0	2.0	6.0	90.0	60.0	50
Not working	24.9	39.8	60.2	78.9	16.3	0.5	0.8	5.4	93.0	68.0	369
Standard of living**											
Low	10.2	26.0	47.4	71.9	6.6	0.0	0.0	4.1	85.7	56.1	196
Medium	22.4	43.0	56.4	83.0	17.6	2.4	0.0	6.1	95.2	64.8	165
High	40.0	47.0	69.6	85.2	29.6	0.9	3.5	6.1	96.5	76.5	115

Characteristics	Per cent of currently married women aged 15-49 years knew about										Number of women
	Condom	Pill	IUD	Female sterilisation	Male sterilisation	Rhythm	Withdrawal	Other	Any method	Any modern spacing method	
Study area**											
HSC-1	29.0	41.2	63.0	82.4	20.2	1.7	1.3	5.9	95.0	70.6	238
HSC-2	14.5	32.8	48.5	75.9	12.0	0.4	0.4	4.6	88.4	57.3	241
Total	21.7	37.0	55.7	79.1	16.1	1.0	0.8	5.2	91.6	63.9	479
** P <0.01 Note: Few cases with missing information on certain characteristics are not shown separately.											

TABLE 2
PER CENT OF WOMEN AGED 13-49 YEARS BY REPORTED SAFE AGE TO BEAR CHILDREN, ACCORDING TO
SELECTED CHARACTERISTICS

Characteristic	Per cent reported that a woman can bear child by exact age (in years)						Per cent believe that pregnancy before age 20 is not safe	Number of women
	<= 18	19-20	21-22	23-24	25 +	Don't know missing		
Age (in years)***								
13-14	0.0	7.4	33.3	0.0	11.1	48.0	48.1	27
15-19	1.5	17.6	41.2	11.8	16.2	11.8	76.5	68
20-24	0.9	14.5	44.4	16.2	20.5	3.4	88.0	117
25-34	5.4	22.3	38.4	10.7	17.0	6.3	81.3	224
35-49	5.3	20.5	39.9	8.0	13.8	8.0	77.7	188
Marital Status***								
Currently married	4.4	23.0	40.1	11.5	15.7	5.4	81.8	479
Never married	0.0	8.8	41.6	9.7	21.2	18.6	75.2	113
Other ¹	9.4	25.0	34.4	0.0	9.4	21.9	59.4	32

Characteristic	Per cent reported that a woman can bear child by exact age (in years)						Per cent believe that pregnancy before age 20 is not safe	Number of women
	<= 18	19-20	21-22	23-24	25 +	Don't know missing		
Religion								
Hindu	4.0	20.8	39.9	10.0	15.7	9.6	78.8	529
Muslim	0.0	25.0	33.3	16.7	25.0	0.0	75.0	12
Christian	3.8	17.9	42.3	14.1	17.9	3.8	84.6	78
Caste/tribe								
Scheduled caste/tribe	4.2	22.9	39.0	8.4	15.8	9.7	81.9	310
OBC	4.0	18.5	38.8	14.1	16.3	8.3	77.9	276
Other	0.0	15.2	60.6	3.0	18.2	3.0	69.7	33
Type of family								
Nuclear	2.9	19.3	39.6	11.2	17.3	9.7	80.7	445
Extended	6.3	23.6	41.4	9.2	13.2	6.3	76.4	174
Education*								
Illiterate	6.7	27.2	30.7	5.7	15.9	13.8	74.6	283
Literate, < grade 5	0.0	18.2	45.5	18.2	0.0	18.2	63.6	11
Grade 5-9	1.5	16.2	50.0	12.6	14.1	5.6	83.3	198
Grade 10 +	1.6	13.8	43.1	17.1	22.8	1.6	84.6	123

Characteristic	Per cent reported that a woman can bear child by exact age (in years)						Per cent believe that pregnancy before age 20 is not safe	Number of women
	<= 18	19-20	21-22	23-24	25 +	Don't know missing		
Occupation								
Agricultural/casual labour	6.5	24.7	32.5	7.8	13.0	15.6	74.0	77
Other work	4.6	19.5	42.5	10.3	12.6	10.3	80.5	87
Not working	3.5	20.7	41.3	11.2	17.2	6.1	81.1	429
Student	0.0	9.7	35.5	9.7	22.6	22.6	67.7	31
Standard of living								
Low	3.5	24.4	33.3	9.7	14.7	14.3	77.1	258
Medium	5.2	21.0	40.0	10.5	17.6	5.7	79.5	210
High	2.6	13.2	51.7	12.6	16.6	3.3	83.4	151
Study area***								
HSC-1	5.3	19.5	41.6	11.6	14.2	7.9	73.6	303
HSC-2	2.5	21.5	38.6	9.7	18.4	9.8	85.0	321
Total	3.8	20.5	40.1	10.6	16.3	8.7	79.5	624
¹ Includes divorced, widowed or separated. * P<0.05 ** P<0.01 *** P < 0.001								

TABLE 3
PER CENT OF WOMEN AGED 13-49 YEARS WHO KNEW ABOUT REPRODUCTIVE TRACT INFECTION (RTI),
ACCORDING TO SELECTED CHARACTERISTICS

Characteristic	Per cent knew that RTI is preventable	Number of women knowing RTI	Per cent knew about RTI	Number of women
Age (in years)				
13-19	[]	7	8.3	84
20-24	80.0	20	17.1	117
25-34	88.6	44	19.6	224
35-49	84.6	26	13.8	188
Marital status				
Currently married	85.4	82	17.2	478
Never married	(53.8)	13	12.6	103
Other ¹	[]	2	6.3	32
Religion				
Hindu	81.8	77	14.8	520
Christian	(84.6)	13	17.1	76

Characteristic	Per cent knew that RTI is preventable	Number of women knowing RTI	Per cent knew about RTI	Number of women
Caste/tribe				
Scheduled caste/tribe	70.0	30	9.9	304
OBC	87.3	55	20.3	271
Other	(80.0)	10	30.3	33
Type of family				
Nuclear	80.6	67	15.4	435
Extended	82.1	28	16.2	173
Education				
Illiterate/ grade <5	(60.0)	15	5.2	291
Grade 5-9	88.2	34	17.6	193
Grade 10 +	84.8	46	38.0	121
Occupation				
Agricultural/casual labour	[]	1	1.3	77
Other work	(81.8)	11	12.8	86
Not working	84.0	81	19.1	425
Student	[]	4	16.0	25

Characteristic	Per cent knew that RTI is preventable	Number of women knowing RTI	Per cent knew about RTI	Number of women
Standard of living				
Low	(76.9)	13	5.1	253
Medium	88.2	34	16.6	205
High	77.1	48	32.0	150
Study area				
HSC-1	80.6	72	24.2	297
HSC-2	84.0	25	7.9	316
Total	81.4	97	15.8	613
Note: Never married and not menstruating women are not included. Few cases with missing information on a few background characteristics are not shown separately, however they are included in the total. ¹Includes widowed, divorced and separated. [] Few cases to base a per cent, hence it is not shown separately. * P<0.05, ** P<0.01, *** P<0.001.				

Table 4
PER CENT OF ADOLESCENT GIRLS (AGED 13-19 YEARS) WHO KNEW ABOUT SAFE SEX, ACCORDING TO
SELECTED CHARACTERISTICS

Characteristic	Per cent reported that safe sex means taking steps to avoid			Per cent having knowledge about safe sex	Number of females
	STD	Preg-nancy	Both STD & pregnancy		
Age (in years)**					
13-14	0.0	0.0	0.0	0.0	27
15-19	11.1	3.7	3.7	13.0	54
Caste/tribe					
Scheduled caste/tribe	8.9	2.2	2.2	8.9	45
OBC	6.5	3.2	3.2	9.7	31
Type of family**					
Nuclear	3.4	1.7	4.5	5.1	59
Extended	18.2	4.5	1.7	18.2	22
Education					
Less than grade 5	0.0	0.0	0.0	0.0	17
Grade 5 +	9.4	3.1	3.1	10.9	64

Characteristic	Per cent reported that safe sex means taking steps to avoid			Per cent having knowledge about safe sex	Number of females
	STD	Preg-nancy	Both STD & pregnancy		
Occupation**					
Working	8.7	0.0	0.0	13.0	23
Not working	13.3	6.7	6.7	13.3	30
Student	0.0	0.0	0.0	0.0	28
Standard of living**					
Low	2.8	2.8	2.8	2.8	36
Medium	7.7	0.0	0.0	11.5	26
High	15.8	5.3	5.3	15.8	19
Study area					
HSC-1	5.1	2.6	2.6	7.7	39
HSC-2	9.5	2.4	2.4	9.5	42
Total	7.4	2.4	2.4	9.5	81
Note: Married adolescent girls are not included. A few categories are not shown separately due to less number of cases, however they are included in the total.					
** P<0.01					

PREVALENCE OF ANAEMIA AND IMPACT OF IRON SUPPLEMENTATION ON ANAEMIC ADOLESCENT SCHOOL GIRLS

Pooja Trivedi* and Dr. Aruna Palta**

ABSTRACT

Iron deficiency anaemia is a global public health problem, as compelling and harmful as epidemics of infectious diseases. Adolescence is a crucial phase of growth since it offers the second and last chance for catch up growth in the life cycle of individuals. It is crystal clear that the role of low birth weight, prematurity and neonatal infant mortality among children born to malnourished adolescent girls is high. So the best way to combat anaemia is supplementation with iron and folic acid tablets, since the absorption of iron from Indian dietaries is too low. 360 anaemic adolescent girls of high school of Raipur City were selected for the study and categorized into two groups. The first group, which was experimental group, was given supplementation with iron and folic acid tablets, while the second group which was the control group was provided only with nutrition education. The subjects of experimental group were provided with different types of supplementation i.e. once a week, twice a week and thrice a week, respectively. Their haemoglobin value was estimated using Cyanmet method. After three months of continuous supplementation again haemoglobin estimation of subjects was done. The study revealed that role of iron and folic acid supplementation is important in improving the haemoglobin level of anaemic adolescent girls. Twice a week supplementation has proved to be more effective and economical as compared to once a week and thrice a week supplementation. The prevalence of anaemia amongst the adolescent girls of this region seems to be very high, so there is an urgent need for assessment, advocacy, prevention and control initiatives to be developed in India to reduce anaemia in adolescent girls.

Key Words: Anaemia, Adolescent girls, Iron folic acid supplementation, Haemoglobin estimation.

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Anaemia is a major public health problem in the world today. Studies have revealed that 65 per cent to 75 per cent of the adolescent girls in India are anaemic¹. Adolescent girls are an important section of our society as they are our potential mothers and future home makers². Adolescent girls are particularly prone to iron deficiency anaemia because of the increased demands of iron by the body³. This anaemia not only affects the present status of health of the adolescent girls, but also shows a deleterious effect when these girls become future mother. A satisfactory haemoglobin status at the time of conception results into safe pregnancy and healthy child birth. This could be attained only when the status of haemoglobin is improved in adolescent girls. So in order to prevent high maternal mortality and high incidence of low birth weight babies in India, there is a need to combat anaemia in adolescent girls. Protein and iron rich diet can improve the haemoglobin status only to some extent. The best way to combat anaemia is supplementation with iron and folic acid tablets, since the absorption of iron from Indian dietaries is too low⁴. Iron status during adolescence may be complicated further by low dietary intake⁵. With an objective to assess the effectiveness and frequency of iron and folic acid supplementation, this study has been planned among the school going adolescent girls of Raipur City of Chhattisgarh State.

MATERIALS AND METHOD

The experimental procedures adopted for the study are outlined as under:

Screening of Anaemic Girls:

(a) Selection of Samples

Samples were taken from different government high schools of Raipur City of Chhattisgarh State. They were selected after their initial screening for haemoglobin levels. A sample of 360 school going adolescent girls was selected on the basis of purposive sampling method.

The date of birth and the age of subjects were confirmed from the school records. These subjects were again divided into two groups i.e. 13-15 years (early adolescence) and 16-18 years (late adolescence).

(b) Estimation of Haemoglobin

Estimation of haemoglobin was carried out by Cyanmet method.

Categorisation for Anaemia

The subjects were categorized as per the WHO (World Health Organization) standard for anaemia into mild, moderate and severe categories. Subjects having haemoglobin levels between 10.1–12.0 g/dl were considered to be suffering from mild anaemia, 7–10 g/dl from moderate anaemia and below 7 g/dl from severe anaemia. 120 girls were taken from each category and thus the sample consisted of 360 girls.

Formation of Experimental and Control Groups

Subjects selected were divided into two groups. Out of 360 anaemic girls, 270 girls were kept in experimental group while the remaining 90 girls were kept in control group.

Out of 270 girls, 90 girls were from the mild anaemia category, 90 from moderate anaemia category, and the remaining 90 girls were from the severe anaemia category. Similarly, in the control group 30 subjects were from the mild anaemia category, 30 from moderate and the remaining 30 were from the severe anaemia category.

Deworming the Subjects

Deworming of the selected samples was done before starting supplementation of iron and folic acid in order to get the best utilization of these nutrients. Deworming tablets were given to the girls, as suggested by the physician.

Iron and Folic Acid Supplementation

After deworming of the subjects, iron and folic acid supplementation was started. 90 subjects of 'mild' category of experimental group were again divided into three groups. These three groups of 30 subjects each were provided with three different types of supplementation of iron and folic acid tablets i.e. once a week, twice a week and thrice a week respectively. Similar division was done for the 90 subjects of 'moderate' and 90 subjects of 'severe' category also.

90 subjects of control group were not given any supplementation. They were only provided with nutrition education. After supplementation of iron and folic acid for three months, again haemoglobin levels were estimated and comparison with previous haemoglobin levels were made.

Statistical Analysis

Mean, standard deviation and 't' test were applied for statistical analysis of data.

FINDINGS AND DISCUSSION

Table 1 depicts the distribution of 360 anaemic subjects selected for the study.

TABLE 1
DISTRIBUTION OF 360 ANAEMIC SUBJECTS ACCORDING TO THEIR
SUPPLEMENTATION

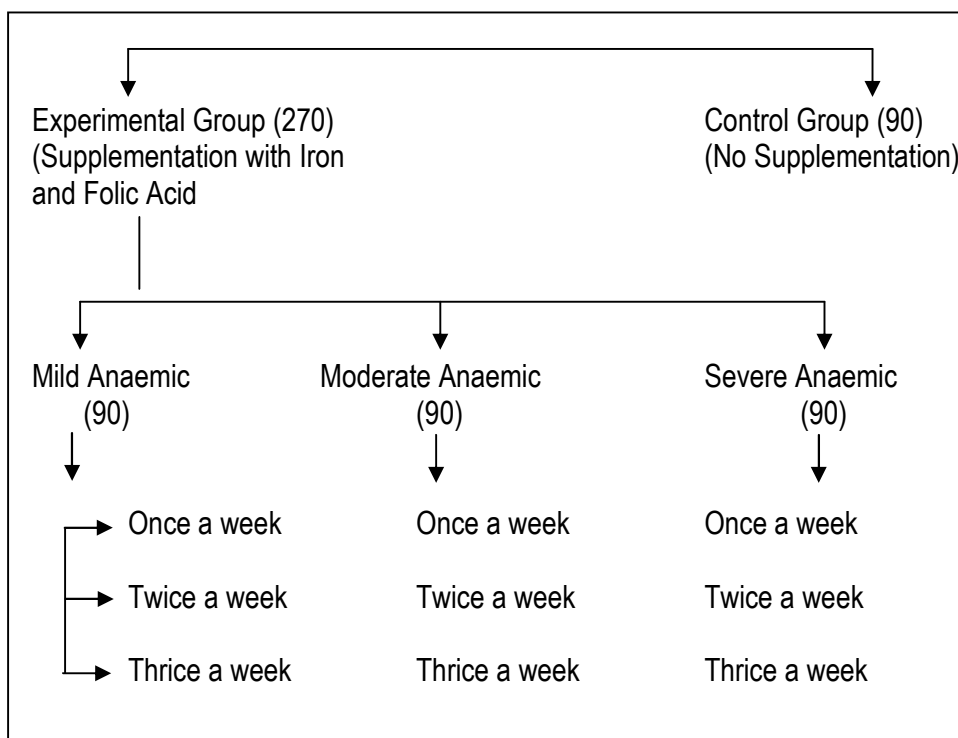


Table 2 shows the prevalence of anaemia amongst the adolescent girls of this region which seems to be very high (82%). Out of the subjects screened for anaemia, 28 per cent revealed mild degree of anaemia, while 32 per cent and 22 per cent were suffering from moderate and severe anaemia respectively. Only 18 per cent girls were within the normal limits of haemoglobin levels.

TABLE 2
PREVALENCE OF ANAEMIA

Severity of Anaemia	Number of Subjects	Percentage (%)
Normal	78	18
Mild	125	28
Moderate	140	32
Severe	97	22
Total	440	100

Table 3 depicts that 89 girls had mild anaemia, 63 girls had moderate anaemia, and 69 girls had severe anaemia in the age group of 13-15 years. The total number of subjects in this age group was 221. Similarly, 31 girls had mild anaemia, 57 girls had moderate anaemia and 51 girls had severe anaemia in the age group of 16-18 years. The total number of subjects in this age group was 139. But overall distribution of the subjects for mild, moderate and severe anaemia was 120, 120 and 120 each when combined for both the age groups.

TABLE 3
DISTRIBUTION OF 360 ANAEMIC GIRLS SELECTED FOR THE STUDY, AS PER THEIR AGE

Age Group (year)	Mild Anaemic (10-12g/dl)	Moderate Anaemic (7-10 g/dl)	Severe Anaemic (below 7 g/dl)	Total No
13-15	89	63	69	221
16-18	31	57	51	139
Total	120	120	120	360

Table 4 depicts the mean haemoglobin values of mild anaemic subjects before and after supplementation. The subjects who received supplementation, only once a week, their mean haemoglobin value before supplementation was 10.80 g/dl. After 12 weeks of supplementation it became 12.65 g/dl. Similarly the subjects of second group who received supplementation twice a week, their mean haemoglobin value before supplementation was 10.69 g/dl, which elevated to 14.10 g/dl, after 12 weeks of supplementation. The last group of 30 girls, who were provided supplementation thrice a week, their mean haemoglobin value before supplementation was 10.73 g/dl. and after supplementation it was 14.63 g/dl. The difference between the mean values was calculated by computing 't' values and significant difference was observed in all the three groups.

TABLE 4
MEAN HAEMOGLOBIN VALUES OF MILD ANAEMIC SUBJECTS 'BEFORE'
AND 'AFTER' SUPPLEMENTATION

Supplementation	Mean Haemoglobin(g/dl) Before Supplementation (N=30) $\pm$ S.D	Mean Haemoglobin (g/dl) After Supplementation (N=30) $\pm$ S.D.	't' Value
Once a Week	10.80 ($\pm$ 0.46)	12.65 ($\pm$ 0.75)	12.00*
Twice a week	10.69 ($\pm$ 0.36)	14.10 ($\pm$ 0.65)	22.50*
Thrice a week	10.73 ($\pm$ 0.34)	14.63 ($\pm$ 0.69)	19.20*

*- Significant at one per cent level.

The mean haemoglobin values of the moderate anaemic subjects is shown in Table 5. Table reveals that the subjects who received supplementation only once a week, their mean haemoglobin value before supplementation was 9.26 g/dl, which after twelve weeks of supplementation became 10.42 g/dl. The subjects of second group who received supplementation twice a week, their mean haemoglobin value before supplementation was 9.12 g/dl and after twelve weeks of supplementation it became 12.46 g/dl. Similarly third group of 30 subjects who were given supplementation thrice a week, their mean haemoglobin value before supplementation was 9.49 g/dl which became 12.87 g/dl after supplementation. The difference between the mean values was found to be significant in all the three groups of moderate anaemic subjects.

TABLE 5
MEAN HAEMOGLOBIN VALUES OF MODERATE ANAEMIC SUBJECTS
'BEFORE' AND 'AFTER' SUPPLEMENTATION

Supplementation	Mean Haemoglobin(g/dl) Before Supplementation (N=30) $\pm$ S.D	Mean Haemoglobin (g/dl) After Supplementation (N=30) $\pm$ S.D.	't' Value
Once a Week	9.26 ($\pm$ 0.31)	10.42 ($\pm$ 0.54)	10.50*
Twice a week	9.12 ($\pm$ 0.48)	12.46 ($\pm$ 0.68)	22.50*
Thrice a week	9.49 ($\pm$ 0.69)	12.87 ($\pm$ 0.72)	19.20*

* Significant at one per cent level.

Table 6 indicates the mean haemoglobin value of severe anaemic subjects. The mean haemoglobin value of the subjects, who received supplementation once a week was 6.30 g/dl. After twelve weeks of supplementation it became 7.94 g/dl. The subjects of second group who were provided tablets twice a week, their initial mean value was 6.45 g/dl, which was elevated to 10.53 g/dl after supplementation. Similarly last group of 30 subjects who received supplementation thrice a week, their mean haemoglobin before supplementation was 6.72 g/dl and it became 11.23 g/dl after supplementation. The difference between the mean values was found to be significant in all the three groups of severe anaemic subjects.

TABLE 6
MEAN HAEMOGLOBIN VALUES OF SEVERE ANAEMIC SUBJECTS 'BEFORE'
AND 'AFTER' SUPPLEMENTATION

Supplementation	Mean Haemoglobin(g/dl) Before Supplementation (N=30) $\pm$S.D	Mean Haemoglobin (g/dl) After Supplementation (N=30) $\pm$S.D.	't' Value
Once a Week	6.30 ($\pm$ 0.56)	7.94 ($\pm$ 0.53)	12.00*
Twice a week	6.45 ($\pm$ 0.45)	10.53 ($\pm$ 0.36)	40.30*
Thrice a week	6.72 ($\pm$ 0.40)	11.23 ($\pm$ 0.96)	24.60*

*- Significant at one per cent level.

Table 7 reveals the mean haemoglobin values of 'control group'. This group was not given any supplementation. It was only provided with nutrition education. The mean haemoglobin values of mild anaemic subjects before experiment was 10.79 g/dl, which after nutrition education became 11.03 g/dl. After computing 't' value, no significant difference was observed between the two means of mild anaemic subjects. In the moderate anaemic subjects, their mean haemoglobin value before experiment was 8.71 g/dl and after experiment it was 9.70 g/dl. Similarly mean haemoglobin value of severe anaemic subjects before experiment was 6.71 g/dl and after experiment it was 7.47 g/dl. The mean difference was found to be significant between the mean values of both the moderate and severe anaemic subjects.

TABLE 7
MEAN HAEMOGLOBIN VALUES OF CONTROL GROUP 'BEFORE' AND
'AFTER' SUPPLEMENTATION

Supplementation	Mean Haemoglobin(g/dl) Before Supplementation (N=30) ±S.D	Mean Haemoglobin (g/dl) After Supplementation (N=30) ±S.D.	't' Value
Once a Week	10.79 (±0.56)	11.03 (±0.53)	1.36 (NS)
Twice a week	8.71 (±0.45)	9.70 (±0.36)	4.30*
Thrice a week	6.71 (±0.40)	7.47 (±0.96)	5.42*

NS = Not significant

*- Significant at one per cent level.

It can be observed from the tables that iron and folic acid supplementation can definitely help in improving the haemoglobin levels of adolescent girls. Although there was a significant increase in blood haemoglobin levels of all the three groups of mild, moderate and severe categories of experimental group, but it was found that from all the three types of supplementation twice a week supplementation has proved to be more effective and economical as compared to once a week and thrice a week supplementation.

Nutrition education also plays a role in improving the nutritional status but only to limited extent as is evident from the case of control group. It is a well known fact that even protein and iron rich diets can improve the haemoglobin status only to some extent. So to increase awareness, nutritional education is good but to improve haemoglobin levels, supplementation is a must. The results of the study can serve as a guideline for distributing iron tablets in educational institutes. Unfortunately, adolescent girls are a neglected sector of the population of our country. So, there is an urgent need to include adolescent girls in the risk category if the iron status of our potential mothers and future homemakers is to be optimum.

Acknowledgement

The authors are grateful to the Chhattisgarh Council of Science and Technology, Raipur (C.G.) for funding this study.

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PREVALENCE OF RTI/STI AMONG REPRODUCTIVE AGE WOMEN (15-49 YEARS) IN URBAN SLUMS OF TIRUPATI TOWN, ANDHRA PRADESH

B. Sri Devi* and N. Swarnalatha**

ABSTRACT

Prevalence of RTI/STI in the present study was 35.6 per cent based on the symptoms and 26.9 per cent based on per-speculum examination. Prevalence of RTI was maximum in 15-29 years age group. The most commonly observed symptoms were vaginal discharge (21.3 per cent) and lower abdominal pain (4.9 per cent). Prevalence of vaginal discharge decreased with an increase in age, education and per capita monthly income. Prevalence was observed higher in scheduled castes and tribes, married women, unskilled worker, IUCD acceptors and those with unhygienic menstrual practices, history of abortions and non-institutional deliveries. Based on laboratory findings, highest positive results were seen in candidiasis (88.9 per cent) followed by trichomoniasis (50.0 per cent). 80.0 per cent of women completed the course of treatment and 57.2 per cent of women got complete relief.

Key Words: Reproductive tract infection, Urban health centre, Anganwadi centre, Cross-sectional study, Health seeking behaviour.

Reproductive Tract Infections (RTI) and Sexually Transmitted Infections (STI) are a group of communicable diseases that are transmitted predominantly by sexual contact and caused by a wide range of bacterial, viral, protozoal, fungal and ecto parasites. RTIs are a significant public health problem as they cause

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widespread morbidity and mortality in men and women, especially of reproductive age¹. In developing countries, RTI/STIs are the second or third most common public health problem of young people. The unprecedented population growth of the 20th century and the movement of that population from isolated rural towns and villages into large crowded urban environments has resulted in an increased frequency of exposure to many diseases of which STIs are amongst the most important. The incidence of RTIs has increased dramatically throughout the world². These RTI/STIs constitute a huge health and economic burden for developing countries and account for 17 per cent of economic losses because of ill health. The importance of STIs has been more widely recognized since the advent of the HIV/AIDS epidemic and there is good evidence that the control of STIs can reduce HIV transmission³. Globally, it is estimated that as many as 340 million new cases of curable STDs other than HIV/AIDS occur each year, most of which are occurring in developing countries. The greatest impact of RTI/STI is on women and children. Each year nearly 1.3 million women die of reproductive health problems that are largely preventable and 1 out of 20 teenagers contract a sexually transmitted disease, some of which causing lifelong disabilities such as infertility or death¹. RTI/STIs are an important cause of morbidity and mortality among women in India, especially those with poor access to appropriate health facilities. Some of the possible consequences of untreated RTI/STIs in women include tubal infertility, still births, abortions, neonatal deaths, ectopic pregnancies, recurrent urinary tract infections, pain during coitus, menstrual irregularities, chronic pelvic pain and maternal death⁴.

The problem of morbidity and mortality in women due to reproductive tract infections is largely ignored because women themselves are reluctant to discuss the gynaecological problems with others. Social stigma attached to an illness is sometimes greater for a woman than a man and therefore a woman is more likely to hide her illness. Some of the reasons for refusing to attend the clinic are socio-economic factors and fear of internal check-up⁵. The problem of RTI/STI morbidity in women is largely due to ignorance, low level of awareness regarding sexual and reproductive health and other social factors like low female literacy, cultural factors and taboos - all withholding the women from seeking health care for RTI/STIs. Many of these infections are asymptomatic and unnotified (80 per cent Gonococcal and chlamydial)².

The incidence of RTI/STI in women is highest in the age group of 15-24 years and it declines after this age group. The reasons for high incidence in this age group includes low levels of protective cervical antibodies, increased sexual

activity, new influence of reproductive hormones causing vast changes in tissues that may lead to increased susceptibility to STI/RTIs⁶. WHO estimates show that in 1995, 150 million new cases of RTI/STIs occurred in South East Asia alone¹.

In India, the prevalence of RTI/STI was 28.8 per cent based on 1999 survey report. The main interventions which could reduce the incidence and prevalence of RTI/STIs include IEC (information, education and communication) campaigns, condom promotion, use of safe microbicides, screening and case finding among vulnerable groups such as pregnant women and sex workers. The challenge is not just to develop new interventions, but also to identify barriers to the implementation of existing tools and to devise strategies for ensuring that effective STI control programmes are implemented in the future¹.

Though RTI/STIs are important from medical and public health point of view, only few studies have been conducted in the community. At present, Indian studies on reproductive health of women are scanty. In view of this, this present population-based study was conducted among reproductive age women in urban slums of Tirupati Town, Andhra Pradesh.

OBJECTIVES

1. To assess the prevalence of RTI/STI by various socio-demographic factors and risk factors among women of reproductive age group;
2. To assess the prevalence of RTI/STI by symptoms and clinical findings; and
3. To assess the treatment practices of women for RTI/STIs.

METHODOLOGY

The cross-sectional study was conducted in urban slums of Tirupati Town by multi-stage sampling technique. In the first stage, among four urban health centres, one centre (Rashtriya Seva Samithi - RSS) was selected randomly by lottery method. In the second stage, out of 11 urban slum areas, 4 were selected randomly by lottery method. In these four urban slum areas, a total of ten Anganwadi Centers (AWCs) are in operation. Eight AWCs were selected randomly by lottery method out of these ten AWCs. In the third stage, 800 women in reproductive age were included as study subjects from the so selected 8 AWCs.

METHOD OF DATA COLLECTION

A list of the reproductive age women was obtained from AWC registers and were serially listed. From each Anganwadi Centre register, 100 women were selected randomly using random numbers' table. Data were collected with the help of pre-designed and pre-tested interview schedules. Information was obtained from the women on their socio-demographic, menstrual, past obstetric and abortion history, IUCD practices and symptoms of RTI/STI. Clinically diagnosed patients were subjected to microscopic examination in Government Maternity Hospital, S.V. Medical College, Tirupati.

RESULTS

Majority of the subjects (24.0%) were in the age group of 20–24 years and 25–29 years (23.1%). Very less number of respondents were there in the age group of 45–49 years (4.4%) (Table 1).

TABLE 1
AGE DISTRIBUTION OF STUDY SUBJECTS

Age Group (Years)	Number of Subjects (Per Cent)
15–19	87 (10.9)
20–24	192 (24.0)
25–29	185 (23.1)
30–34	133 (16.6)
35–39	101 (12.6)
40–44	67 (8.4)
45–49	35 (4.4)
Total	800 (100.0)

TABLE 2
PREVALENCE OF RTI/STI BASED ON SYMPTOMS (N=800)

Symptom	Number of Subjects (Per Cent)
Vaginal discharge	170 (21.3)
Lower abdominal pain	39 (4.9)
Backache	28 (3.5)
Infertility/Sterility	21 (2.6)
Itching	4 (0.5)
Dyspareunia	3 (0.4)
Vaginal discharge and Other symptoms	20 (2.5)
Normal	515(64.3)

Prevalence of RTI/STI based on symptoms was found to be 35.7 per cent. The most common RTI/STI symptom was vaginal discharge, 21.3 per cent followed by lower abdominal pain 4.9 per cent and backache 3.5 per cent. Vaginal discharge with any of the other symptoms of RTI/STI was found in 2.5 per cent of women (Table 2).

TABLE 3
PREVALENCE OF RTI/STI BASED ON CLINICAL CRITERIA (N=800)

Diagnosis	Number of Subjects (Per Cent)
NSV/BV	95 (11.9)
Candidiasis	45 (5.6)
PID	40 (5.0)
Cervicitis	25 (3.1)
Trichomoniasis	10 (1.2)
Normal	585 (73.2)
Total	800 (100.0)

Based on clinical criteria, the overall prevalence of RTI/STI was found to be 26.8 per cent. The common RTI/STI found in the women were Non-Specific Vaginosis/Bacterial Vaginosis (11.9%), Candidiasis (5.6%) and PID (5.0%) (Table 3).

TABLE 4
LABORATORY FINDINGS (MICROSCOPY) (N = 215)

Number of Subjects (Per Cent)	Laboratory Results		
	Positive (Per Cent)	Negative (Per Cent)	Total (Per Cent)
Candidiasis	40 (88.9)	5 (11.1)	45 (100.0)
NSV/BV	10 (10.5)	85 (89.5)	95 (100.0)
Trichomoniasis	5 (50.0)	5 (50.0)	10 (100.0)
Cervicitis	2 (8.0)	23 (92.0)	25 (100.0)
PID	0 (0.0)	40 (100.0)	40 (100.0)
Total	57 (26.5)	158 (73.5)	215 (100.0)

Based on laboratory findings, highest positive results (88.9%) were seen in candidiasis followed by trichomoniasis (50.0%) and cervicitis (8.0%) (Table 4).

TABLE 5
PREVALENCE OF RTI/STI BY DEMOGRAPHIC FACTORS (N=800)

Factor	RTI/STI		Total	χ^2	P
	Present (Per Cent) (n=215)	Absent (Per Cent) (n=585)			
Age Group					
15–19	19 (21.8)	68 (78.2)	87 (100.0)	19.06	<0.005, s
20–24	69 (35.9)	123 (64.1)	192 (100.0)		
25–29	53 (28.6)	132 (71.4)	185 (100.0)		
30–34	36 (27.1)	97 (72.9)	133 (100.0)		
35–39	24 (23.8)	77 (76.2)	101 (100.0)		
40–44	10 (14.9)	57 (85.1)	67 (100.0)		
45–49	4 (11.4)	31 (88.6)	35 (100.0)		
Religion					
Hindu	194 (28.7)	482 (71.3)	676 (100.0)	7.38	<0.01, s
Muslim	21 (16.9)	103 (83.1)	124 (100.0)		
Social Status					
OC	65 (22.7)	221 (77.3)	286 (100.0)	9.15	<0.05, s
BC	89 (26.0)	253 (74.0)	342 (100.0)		
SC	53 (35.8)	95 (64.2)	148 (100.0)		
ST	8 (33.3)	16 (66.7)	24 (100.0)		
Type of Family					
Nuclear	117 (24.0)	371 (76.0)	488 (100.0)	5.35	<0.05, s
Joint	98 (31.4)	214 (68.6)	312 (100.0)		

Factor	RTI/STI		Total	χ^2	P
	Present (Per Cent) (n=215)	Absent (Per Cent) (n=585)			
Literacy Status					
Illiterate	15 (34.1)	29 (65.9)	44 (100.0)	2.75	>0.5, ns
Just literate	63 (27.6)	165 (72.4)	228 (100.0)		
Primary	71 (27.5)	187 (72.5)	258 (100.0)		
Middle	12 (29.3)	29 (70.7)	41 (100.0)		
Hr. Secondary	48 (23.9)	153 (76.1)	201 (100.0)		
Degree and above	6 (21.4)	22 (78.6)	28 (100.0)		
Occupation					
Business	4 (26.7)	11 (73.3)	15 (100.0)	22.82	P<0.0001 s
Skilled Worker	7 (36.8)	12 (63.2)	19 (100.0)		
Housewife	156 (24.8)	473 (75.2)	629 (100.0)		
Student	16 (21.3)	59 (78.7)	75 (100.0)		
Unskilled Worker	32 (51.6)	30 (48.4)	62 (100.0)		
Marital Status					
Married	197 (27.4)	522 (72.6)	719 (100.0)	0.99	<0.05, ns
Unmarried, Widowed and Separated	18 (22.2)	63 (77.8)	81 (100.0)		
Per-capita Income					
<300	13 (61.9)	8 (38.1)	21 (100.0)	27.18	<0.000, s
300-499	37 (36.6)	64 (63.4)	101 (100.0)		
500-749	50 (28.7)	124 (71.3)	174 (100.0)		
750-999	56 (27.9)	145 (72.1)	201 (100.0)		
1000-1999	37 (20.7)	142 (79.3)	179 (100.0)		
>2000	22 (17.7)	102 (82.3)	124 (100.0)		
No. of Live Births (n=724)					
0	10 (47.6)	11 (52.4)	21 (100.0)	41.45	<0.000, s
1	54 (50.0)	54 (50.0)	108 (100.0)		
2	140 (28.2)	356 (71.8)	496 (100.0)		
≥ 3	11 (11.1)	88 (88.9)	99 (100.0)		
Obstetric Risk Factors (n=88)					
Abortion	30 (42.9)	40 (57.1)	70 (100.0)	3.09	>0.05, ns
IUCD insertion	6 (60.0)	3 (40.0)	10 (100.0)		
Hysterectomy	2 (25.0)	6 (75.0)	8 (100.0)		

Factor	RTI/STI		Total	χ^2	P
	Present (Per Cent) (n=215)	Absent (Per Cent) (n=585)			
Person Conducting Delivery (n=724)					
	15 (6.1)	232 (93.9)	247 (100.0)	110.31	<0.000 s
Pvt. Doctor	122 (39.6)	186 (60.1)	308 (100.0)		
Govt. Doctor	20 (35.7)	36 (64.3)	56 (100.0)		
Nurse	5 (35.7)	9 (64.3)	14 (100.0)		
ANM	35 (44.3)	44 (55.7)	79 (100.0)		
TBA	15 (75.0)	5 (25.0)	20 (100.0)		
Family Member					
Person Conducting Abortion (n=70)					
	13 (41.9)	18 (58.1)	31 (100.0)	0.05	>0.05, ns
Pvt. Doctor	15 (44.1)	19 (55.9)	34 (100.0)		
Govt. Doctor	2 (40.0)	3 (60.0)	5 (100.0)		
Unregistered Practitioner					
Menstrual Practices					
	13 (18.1)	59 (81.9)	72 (100.0)	6.31	<0.05, s
Sterilized Pads	123 (28.8)	304 (71.2)	427 (100.0)		
Washed Cloth	99 (32.9)	202 (67.1)	301 (100.0)		
Ordinary Cloth					

Highest prevalence of RTI/STI was found in the 20–24 years' age group (35.9%) followed by 25–29 years' age group (28.6%). Lesser prevalence was found in the 45–49 years age group (11.4%). The differences in prevalence of RTI/STI by age groups were also statistically significant. The prevalence of RTI/STI was found to be higher among Hindus (28.7%) than in the other religion groups but the differences in the prevalence by religion were not found to be statistically significant. The prevalence of RTI/STI was found to be higher in scheduled castes (35.8%) and scheduled tribes (33.3%) than in other social groups. The differences in the prevalence of RTI/STI by social status were also found to be statistically significant. The prevalence of RTI/STI was found to be highest in women living in joint families (31.4%) compared to other groups of women and the differences were also found to be statistically significant. Highest prevalence of RTI/STI was found in the illiterates' age group (34.1%). The prevalence of RTI/STI decreased with the level of education and found to be lowest in degree and above group (21.4%) and higher secondary level of literacy status (23.9%). However, these differences in the prevalence of RTI/STI by

literacy status were not found to be statistically significant. The prevalence of RTI/STI found to be higher among unskilled workers' group (51.6%) and least in students' group (21.3%). The differences in RTI/STI prevalence by occupation were also found to be statistically significant. The prevalence of RTI/STI was found to be 27.4 per cent in married women compared to unmarried women (21.1%). One out of three women in widowed group and one out of two women in separated group were found to have RTI/STI. And the differences in prevalence of RTI/STI was not statistically significant. Higher prevalence of RTI/STI was found in less than 300 per capita income groups (61.9%). The prevalence of RTI/STI decreased with increase in the per capita income level of the women. The differences were also statistically significant. Higher prevalence of RTI/STI was observed in women having one child birth (50.0%), followed by women having no children (47.6%), prevalence was decreased with increased number of births. RTI/STI prevalence was higher among women who had IUCD (60.0%) compared to other risk factors like abortions and hysterectomy. The differences were however not statistically significant. Higher prevalence of RTI/STI was found among women whose deliveries were conducted by family members (75.0%) followed by TBA (44.3%) while least in deliveries conducted by private doctor (6.1 per cent). The differences in the prevalence of RTI/STI by person conducting deliveries were also statistically significant. The prevalence of RTI/STI was found to be highest in those women who were using ordinary cloth (32.9 per cent) and least in those using sterilized pads (18.1 per cent). The differences in proportion were also found to be statistically significant.

TABLE 6
PREVALENCE OF VARIOUS TYPES OF VAGINAL DISCHARGE IN RTI/STI
(N=215)

Diagnosis	Type of Discharge					Total (%)
	Cheesy	Mucoid	Muco-purulent	Pale Creamy	Watery	
Candidiasis	30 (66.7)	0 (0.0)	15 (33.3)	0	0	45 (100.0)
NSV/BV	0	10 (10.5)	20 (21.1)	0	65 (68.4)	95 (100.0)
Trichomoniasis	0	0	0	10 (100.0)	0	10 (100.0)
PID	0	10 (25.0)	0	0	30 (75.0)	40 (100.0)
Cervicitis	0	5 (20.0)	15 (60.0)	0	5 (20.0)	25 (100.0)
Total	30 (14.0)	35 (16.3)	40 (18.6)	10 (4.7)	100 (46.5)	215 (100.0)

The commonest type of vaginal discharge found among RTI/STI cases was cheesy in candidiasis (66.7%), watery (68.4%) in NSV/BV, watery (75.0%) in

PID, muco-purulent in cervicitis (60.0%) and pale creamy in trichomoniasis (100%) (Table 6).

TABLE 7
TREATMENT PRACTICES OF RTI/STI (N = 215)

Diagnosis	Source of Treatment		Total (Per Cent)
	Govt. Doctor (Per Cent)	Pvt. Doctor (Per Cent)	
Candidiasis	35 (77.8)	10 (22.2)	45 (100.0)
Cervicitis	20 (80.0)	5 (20.0)	25 (100.0)
NSV/BV	72 (75.8)	23 (24.2)	95 (100.0)
PID	31 (77.5)	9 (22.5)	40 (100.0)
Trichomoniasis	7 (70.0)	3 (30.0)	10 (100.0)
Total	165 (76.7)	50 (23.3)	215 (100.0)

$\chi^2=0.49$; df=4; P=0.97, ns

Government doctor was the main source of treatment for all types of RTI/STI (76.7%) compared to private doctor (23.3%). However, the sources of treatment by various health providers of RTI/STI were not statistically significant (Table 7).

TABLE 8
TREATMENT OUTCOME IN RTI/STI (N = 215)

	Complete Relief (Per Cent)	Partial Relief (Per Cent)	No Relief (Per Cent)	Total (Per Cent)
Candidiasis	40 (88.9)	5 (11.1)	0 (0.0)	45 (100.0)
Cervicitis	9 (36.0)	14 (56.0)	2 (8.0)	25 (100.0)
NSV/BV	58 (61.1)	37 (38.9)	0 (0.0)	95 (100.0)
PID	10 (25.0)	25 (62.5)	5 (12.5)	40 (100.0)
Trichomoniasis	6 (60.0)	4 (40.0)	0 (0.0)	10 (100.0)
Total	123 (57.2)	85 (39.5)	7 (3.3)	215 (100.0)

$\chi^2=40.6$; df=4; P<0.001, s

Relief from symptoms of RTI/STI was obtained in majority of patients (57.2%), while partial relief was found in 39.5 per cent of cases. Higher relief was obtained with regard to candidiasis (88.9%) and NSV/BV (61.1%) than in other types of RTI/STI. The differences among the groups were also found to be statistically significant (Table 8).

TABLE 9
PARTNER TREATMENT IN RTI/STI (N = 215)

Diagnosis	Partner Treatment		Total (Per Cent)
	Yes (Per Cent)	No (Per Cent)	
Candidiasis	0 (0.0)	45 (100.0)	45 (100.0)
Cervicitis	5 (20.0)	20 (80.0)	25 (100.0)
NSV/BV	5 (5.3)	90 (94.7)	95 (100.0)
PID	0 (0.0)	40 (100.0)	40 (100.0)
Trichomoniasis	10 (100.0)	0 (0.0)	10 (100.0)
Total	20 (9.3)	195 (90.7)	215 (100.0)

$\chi^2=111.45$; $df=4$; $P<0.000$, s

In majority of cases of RTI/STI, the male partner was not treated at all (90.7%). There was partner treatment only in some cases of cervicitis (20.0%) and NSV/BV (5.3%). The differences of partner treatment among various types of RTI/STI were found to be statistically significant (Table 9).

DISCUSSION

Prevalence of RTI/STI in the present study was 35.6 per cent based on symptoms (and 26.8% based on per-speculum examination). This is comparable with other community-based studies ^{1,3,7,8,9,10,11,12,13}. In all the studies prevalence of RTI/STI varied considerably, from 21.9 to 92 per cent. These variations in prevalence in various studies may be due to the difference in socio-demographic, cultural, diagnostic procedures and treatment seeking behaviour.

The present study revealed that vaginal discharge was the most commonly observed symptom constituting 21.3 per cent followed by lower abdominal pain (4.9%) and backache (3.5%). Some of them had vaginal discharge associated with other symptoms (2.5%). The prevalence of symptoms of RTI/STI was comparable to that of other studies^{7,8,1,5,11,10,14}. Therefore, the authors feel that vaginal discharge was most commonly observed symptom in most of the studies. Variations in proportions of symptoms may be factors like high-risk behaviour, accessibility of health facility, treatment seeking behaviour, etc.

The prevalence of RTI was maximum in 15-29 years age group (86.3%) which may be attributed to higher proportion of married people in the younger age group while it was not so in other studies.^{8,10}.

Present study revealed that prevalence of RTI/STI decreased with an increase in the level of education. It was similar to the findings of other studies^{8,1,10}. The prevalence of RTI/STI was observed maximum in women having one child (50.0%) which was similar to that found in Agra (57.0%)⁸ but it was contrast to the findings of Rajasthan (13%)¹⁰. This increased prevalence of RTI/STI after the first delivery may be due to the fact that the first delivery may be more traumatic and may increase the chances of infection. The prevalence of RTI in the study was 24.0 per cent in nuclear families and 31.4 per cent in joint families.¹⁰

CONCLUSION AND RECOMMENDATION

The most commonly observed symptoms were vaginal discharge (21.3%) followed by lower abdominal pain (4.9%), backache (3.5%), infertility (2.6%), itching (0.5%) and pain during intercourse (0.4%). More than one symptom was present in 2.5 per cent of study subjects. Non-specific vaginitis or bacterial vaginosis (11.9%) was the commonest observed RTI/STI followed by candidiasis (5.6%), PID (5%), cervicitis (3.1%) and trichomoniasis (1.2%). Prevalence of vaginal discharge decreased with an increase in age, level of education and income. The prevalence of RTI/STI was observed to be higher in scheduled castes and tribes (35.8% and 33.3%) respectively.

Health education regarding the risk factors of unhygienic menstrual practices, non-institutional deliveries and illegal abortions must be imparted to the women in the study area in order to bring about a behavioural change to protect them from RTI/STI. During treatment of RTI, the importance of partner treatment must be explained to the patients in order to prevent recurrence.

LIMITATIONS OF THE STUDY

1. Risk assessment was not calculated because most of the women refused to disclose their extra-marital relations due to shyness or the prevailing local customs.

2. Healthy women were not screened because these tests were very painful and pertaining to their private parts. Women had not given their consent in spite of our intensive efforts for convincing them.

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