**Peer educator model to improve urban slum women’s knowledge about Reproductive Tract Infections (RTIs) and Sexually Transmitted Infections (STIs): A pilot study in India**

**Abstract**

Reproductive morbidity, which has an enormous impact on health and quality of life of women, has received relatively less attention where? Clarify. The objective of this research paper is to discuss the process and effectiveness of the attempts to provide health education to urban slum women of reproductive age with specific reference to RTIs/ STIs using a peer education model. A pilot project was initiated in three urban slums of Pune city, in the western state of Maharashtra, India. Please indicate that this was a two-tiered intervention, the first tier included training of peer educators first and then the women themselves. Ten peer educators participated in a 16 hours extensive training program. Peer educators showed a statistically significant change in knowledge of reproductive health after the training (Z= -2.670, p=0.008). In the second tier, peer educators organized four educational sessions for 83 women from urban slums in Pune city. Pre-post test results indicated significant difference in the knowledge of participants, scores changed from (Mean and SD) 3.9±2.4 to 11.0±2.1 (p=0.000) respectively. Results show that the intervention resulted in an improvement of reproductive health knowledge among XXX (name the population).

**Keywords:** Health education, Women’s health, Health promotion, Urban slum, India

**Introduction**

Reproductive health is an umbrella concept, which consists of a range of issues such as abortion, antenatal care, contraception, sexual health including sexually transmitted diseases and variety of reproductive morbidities (Kotwal, include all authors in the first citation, and then et al in subsequent citations 2014). Each dimension of the reproductive health is important, however, reproductive morbidity, which has enormous impact on health and quality of life of women, has received relatively less attention, in global health research (?) Sexual and reproductive health problems are estimated to be 18% of the total global burden of diseases worldwide and 32% of the burden among women in the reproductive age group ([Bhanderi](http://www.ncbi.nlm.nih.gov/pubmed/?term=Bhanderi%20MN%5Bauth%5D) & [Kannan](http://www.ncbi.nlm.nih.gov/pubmed/?term=Kannan%20S%5Bauth%5D), 2010). Every year an estimated 50 million women are affected by reproductive morbidity and for at least 18 million of them, these morbidities have debilitating effects **(Tehrani** see comment above regarding using ‘et al’. 2011). A culture of silence and taboos surrounding reproductive tract infections (RTIs) can severely compromise women’s health and health seeking behavior (Garg, 2002; Kim, 2012). Gender roles, male dominance, lack of freedom, mobility and decision-making, have an effect on treatment seeking behaviour (Nagarkar & Mhaskar, 2014).

In developing countries, unprecedented population growth of the 20th century and the movement of that population from rural to crowded urban places has resulted in an increased frequency of exposure to many diseases including sexually transmitted infections (STis) How? This is quite the leap, this claim needs explanation and a citation. These RTI/STIs constitute a pressing health and economic burden for developing countries and account for 17 percent of economic losses?? Needs more precision – please find a citation that indicates DALY’s lost due to ill health (Devi & Swarnalatha, 2007). Deep-rooted patriarchal norms in Indian culture and society prevent women from seeking health education and other help for RTIs and STIs (Kamalapur, 2013). When a syndrome is detected, treatment follows immediately after they make contact with health personnel. There is a program to treat symptoms and other physical consequences of RTIs/STIs. However, prevention of RTIs/STIs which is an important public health function is neither implemented nor accounted for in program. This is a major gap in the existing reproductive and child health programme. Unclear. Are you stating that despite the availability of health education programs to prevent or treat RTIs/STIs, women do not access them? Please clarify. This research study is an attempt to bridge the gap by providing intervention to improve knowledge of women with reference to RTIs/STIs using local resources.

Provide a detailed discussion about the importance and efficacy of peer-education, specifically related to RTIs/STIs. Use your Medley et al reference here.

**Purpose of the study**

In this paper we discuss the effectiveness of an intervention to provide health education to urban slum women in reproductive age group with specific reference to RTS//STIs using a peer education model.

**Methodology**

**Study Design and Setting**

**Write your hypotheses, and provide your connecting statistical tests.**

A quasi-experimental describe why is it quasi-experimental study was undertaken to measure the effectiveness of peer imparted education related to the knowledge of RTIs/STIs among women in the reproductive age group. This study included three main steps; development of reproductive health education package with specific reference to RTI/STI, selection and capacity building of peer educators and lastly delivery of health education by peer educators to women in the community. Each of these steps were planned and implemented carefully to deliver effective health education intervention.

**Setting:** The study was carried out in three urban slums located in the suburbs approximately 8-kilometers from the Pune city, Maharashtra. These three slums were selected on the basis of researchers’ familiarity with the community. According to a recent survey by the local Municipal Corporation (describe this organization for foreign audiences), total population of the study area was 7247 ,of which 1369 were women in the 18-49 year age group. Main occupation of the men in this area was class four level services explain this a little more in the nearby industry or day labor on construction sites. Women were homemakers or were domestic help. The slum had electricity supply, primary school, and a child development center funded by the local government. Public toilet facilities and water outlets were provided by the Municipal Corporation. There were two private fee-for-service health care providers just outside the boundary of the slum area, whereas free public health facilities were nearly 8-10 kilometers away. Slum dwellers preferred use of private vehicles, as public transport facilities were scarce.

**Sample:**

The study was designed to detect a medium effect size corresponding to a standardized mean difference of Cohen’s d = 0.02. Hypothesis was directional in favor of the intervention. Using G\* Power software an allocation ratio of 1 was set, and revealed that a minimum of 312 participants (156 in intervention group and 156 in control group) needed to enroll in the study for statistical power = 0.80, α = 0.05, one tailed. However, a sample of 83 participants was used for the intervention.

**Data collection tools**

Prior to data collection, approval to conduct research was obtained from XXX (name the organization). Written consent was obtained from the participants, after an explanation of the voluntary nature of the participation was provided before the implementation of the intervention. Were the participants divided into intervention and control groups? In the earlier section, you have mentioned experimental and control groups.. Also, clearly, this is about the actual women from the slums, not the peer-educators. It is important to provide some text clarifying the process here. A 20 item questionnaire constructed in the local language, evaluating participants’ awareness about menstruation and menstrual hygiene, risk factors, symptoms and prevention of RTIs/STIs, symptoms and causes of other reproductive morbidities was administered as a pre-test to XXX women. The participants were required to identify answers correctly. After each health education session, the same 20 item questionnaire was administered immediately as a post-test. A follow up post test was administered after a gap of 3 months. . Referral linkages were established as a part of the study to provide support to those participants who reported symptoms. Lastly, provide psychometric information (reliability, validity).

**Data Analysis**

Data were analyzed using Statistical Package for the Social Sciences software (SPSS 17). To assess level of knowledge, correct responses in the pre test and post test were assigned scores. The minimum score was zero and maximum was 20. The scores were also computed separately for each session. Wilcoxon test was used for peer educators knowledge assessment There is no explanation of how peer educators were tested – this needs text in the data collection/methods section. Paired t-test was used to test the statistical significance of difference in pre and post test for the 83 participants.

**Results**

**Development of health education package**

A rigorous review of existing education modules was undertaken in the initial phase of the study (elaborate – provide information on the sources you used). A detailed education module was prepared in a local language, taking into consideration the local culture, language, important health issues and issues pertaining to reproductive health morbidities and sexually transmitted infections. Contents of the module were presented to a group of consultants comprising a gynecologist, a health educator, and a master trainer in reproductive and health program. A final module was prepared after incorporating suggestions provided by this team. The content included comprehensive knowledge of reproductive morbidities which included menstruation and menstrual hygiene, RTIs/STIs symptoms, risk factors, myths and beliefs surrounding preventive and promotive health practices, other reproductive morbidities, importance of communication. Variety of material such as flipcharts, power point slides, vignettes, models (for example, the menstrual cycle with safe and unsafe days explained using round cardboard where days were marked with different colored pencils) were prepared and used as learning aids. A detailed handbook with a set of models was given to each peer educator.

**Selection and capacity building of peer educators**

We decided to take peer educators for this task because participatory, empowerment, a model of education is effective. Many advocates of peer education claim that this horizontal process of peers (equals) talking among themselves is key to the impact of peer education on behavior change. (find a citation, provide a theoretical framework, see earlier comments) Peer education may also effect change at the group or societal level, by modifying norms and stimulating collective action that leads to changes in program and policies (Flanagan & Mahler, 1996). Selection of peer educators was done on the basis of their familiarity with the community, with a minimum 10th grade education, fluency in local language, interest and enthusiasm in being trained as peer educator. A total of sixteen women were interested in the training, but only ten women were selected for capacity building training (explain briefly why). The mean age of the peer educators was 35.7±10.9 and all had completed a high school level education and could read and write in the local vernacular language.

The ten women selected to be peer-educators were trained for total 16 hours in an intensive training program. Individual and group assignment, role plays, games were used to get feedback on the training and to check whether they understood the subject matter or not and finally for evaluation??Unclear. Subsequently a pre and post test was conducted for knowledge assessment of peer educators. Results are provided in Table 1. The training emphasized communication skills along with technical details. Mock (practice) sessions in the delivery of the peer-education were conducted after training. [Include here what the peer educators were trained to do, specifically – where they trained to meet one-on-one with women or were they to conduct presentations to women in a public setting] This process provided a sense of self-efficacy to the peer-educators. How do you know? Was this a finding? If so, you need to provide how you tested for it, and what the specific results were. Two refresher sessions (2 hours duration each) were conducted after the training but just prior to their public performance (see comment above).

Peer educators’ level of knowledge assessed by a pre and post test. A Wilcoxon signed- ranked test showed that 16 hours of rigorous training program did elicit a statistically significant change in knowledge of peer educators. The baseline knowledge score was 6.67± 2.29 which was improved to 12.22± 4.0 in post test. Refresher session was conducted with the gap of one month. Statistically significant change in knowledge (Z= -2.724, p= 0.006) was seen with change in mean knowledge rating from 12.22± 4.0 to 14.3±2.9. Table 1 shows change in mean knowledge for each session covered in the training and its significance.

**Implementation of intervention**

During the training period they organized women’s meetings and decided convenient day and time for community education sessions. This was very important step because women were hesitant to talk about RTIs/STIs in public meetings. This helped in establishing initial rapport and made community receptive to the sessions. Peer educator organized monthly one health education session in the community each session lasting for about 45 minutes. Peer educators conducted total 16 sessions. Women in reproductive age group, irrespective of their ethnic group, education, occupation, were included in the sessions. This 45 minutes long session was tailored carefully; lecture by peer educator for 30 minutes followed by interactive session. Visual aids, flipcharts, posters were used. The topic included menstruation, menstrual cycle, menstrual hygiene, RTIs/STIs symptoms, risk factors, myths and beliefs, prevention of RTIs/STIs, promotive health practices, symptoms and risk factors and prevention of other reproductive morbidities (uterine prolapse, cervical cancer, abortion) and finally contraception.

Wherever possible, provide visuals of your materials.

A major ethical issue of providing treatment to the women who would report after the education session was handled by establishing strong referral link.?? Clarify Researchers and peer educators contacted the hospital authorities which was managed by a neighboring industry under its corporate social responsibility (CSR) initiative and assured free treatment for all those report during the program.

**Effectiveness of peer imparted education**

As the study is ongoing, explain this. This is the first reference to the ongoing nature of your project. Clarify how your data analysis is restricted to 83 participants as a pilot. we present the result of 83 women who have completed minimum 4 sessions organized and delivered by peer educators. Participants’ age ranged from 18-49 years, with a mean age of 34.9±8.20 years. Majority of the participants had completed middle or high school education whereas 9.6 percent of the participants were illiterate. Eighty three percent of participants were homemakers and 13.3% of participants were unskilled labor..

**Knowledge assessment of participants**

Knowledge assessment of participants was also undertaken by conducting pre and post test and mean was compared by paired T test. Mean knowledge change was 3.9±2.4 to 11.0±2.1 for pre and post test respectively. Each of the health education session which includes menstruation and menstrual hygiene (p=0.000), reproductive tract infections (p=000), sexually transmitted infections (p=0.000)and other reproductive morbidities (p=0.000) shows significant knowledge change. Table 2 shows change in mean knowledge for each session covered in the health education session and its significance.

**Discussion**

 The pilot study is important because reproductive morbidities is one of the less discussed issue at the level of policy as well as at the level of community. ?? See comments at the end. This is perhaps because policy or programme has clinical approach and technical solution for these morbidities (NIFHW, 2014). On the other side women do not discuss about this subject. They face cultural and social barriers to discuss about genitals and any morbidity involving genital area openly including with health care provider especially if he is of male gender (Prasad et al, 2005).

 In India prevalence of reproductive tract infections varies from 11 to 72 per cent. Moreover 27 to 56 percent of women in urban slum continue to suffer because of lack of knowledge about treatment facilities, material deprivation and poor hygienic conditions (Nagarkar and Mhaskar, 2014). This information needs to be presented earlier in our paper as well to highlight the importance of the issue. Our study showed positive effect of health education on women’s knowledge of reproductive health. Significant improvement was seen with relation to knowledge about menstruation and menstrual hygiene, reproductive tract infections, sexually transmitted infections and other reproductive morbidities which includes uterine prolapse, cancer cervix, etc. Researchers came across several intervention studies conducted in adolescent group though, indicating effectiveness of an educational intervention in increasing knowledge in the range of 30 to 60 percent after an intervention (Menna, 2015; Rangappa, 2012; Malleshappa, 2011; Parwej, 2005). Although a large body of research on the intervention activities and innovative approaches to improve reproductive health exist, target group was either school going or adolescent.

 In the intervention process, our main emphasis was giving knowledge about changing hygienic practices during menstruation, symptoms and importance of treatment seeking at right time. In India, current programmatic component focuses on the management of the RTIs and STIs. Asymptomatic nature of RTI, stigma, lack of awareness regarding morbidities, cost of care, absence of female doctor, and long waiting times pose serious threat to utilization of existing health care facility (Prasad, 2005).Along with these, low level of awareness and knowledge about reproductive morbidities results in less utilization of available services and high burden of untreated illnesses. Because of severe consequences and other associated morbidities, early detection and treatment plays an important role. Studies suggest integrated approach for creating knowledge and awareness to control spread of sexually transmitted infections and reproductive health morbidities (Rejoice, 2014; Bhanderi & Kannan, 2010).

Peer-led education was found to be one of the effective methods of bringing in desired change (Tolli, 2012; Parwej, 2005). Peer education programs are based on the rationale that peers have a strong influence on group’s behavior. As members of the target group, peer educators are assumed to have a level of trust and comfort with their peers that allows for more open discussions of sensitive topics (Campbell and MacPhail, 2002) Also needs to be addressed earlier in the paper.. Similar observation was made in the current research, during the community sessions, women were comfortable discussing such issues with peer educators. Women expressed their concerns, they also discussed barriers to behavior change, change in husband’s knowledge and behavior was also expressed as a need. Similarly, peer educators are thought to have good access to hidden populations that may have limited interaction with health programs. Interventions using peers can also be more cost-effective than interventions that rely on highly trained professional staff (Medley et. al.2009 ). We argue that peer education is an effective tool in promoting health related knowledge and behaviors. However it requires proper preparation, training, supervision, and evaluation (Abdi & Simbar, 2013).On this background current study highlights importance of awareness generation at grass root level with sustainable approach.

**Limitations of the study**

The study has certain limitation in terms of sample size. However, vigilant generalization?? Unclear. may be drawn as the participants represent women in urban slum sharing same demographic, socio-economic characteristics.

A more substantive discussion about your pilot study *per se* needs to included, what did you learn from the pilot study itself – what worked, did not work, for instance, what would you differently the next time you implemented the intervention. Since your manuscript is about the pilot study itself, you will need to elaborate.

**Conclusion and Recommendation**

The present study showed that the education intervention conducted over a period of 6 months has a positive impact on knowledge .Health education based on ‘peer educator’ model led to a remarkable improvement in the awareness and knowledge about reproductive health in urban women. The intervention given is easily replicable nationwide considering acceptance of peers from own community. Because of its significant result, we conclude that this intervention has potential for further adaptation and development. Scale up of existing reproductive and child health program, considering peer education approach on certain subjects is recommended through current study.

**References: revise your APA format below.**

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Table 1: Knowledge assessment of peer educators

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Training domain** | **Pre test (mean score)****(n=10)** | **Post test (mean score) (n=10)** | **Z score** | **Asymp.sig. (2- tailed )** |
| Menstruation and menstrual hygiene  | 2.3±1.1 | 4.5± 0.7 | -2.533 | 0.008\* |
| Reproductive tract infections &Sexually transmitted infections | 3.6±1.1  | 5.2±2.2 | -1.919 | 0.055\* |
| Other reproductive morbidities (cervical cancer, uterine prolapse, abortion) | 0.5± 0.7 | 2.1±1.6 | -2.388 | 0.017\* |
| Total score for training period | 6.67±2.2 | 12.2±4.0 | -2.670 | 0.008\* |
| Refresher training  | 12.2± 4.0  | 14.3±2.9.  | -2.724 | 0.006\* |

 (\*p<0.05)

Table 2: knowledge assessment of community women

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Training domain** | **Pre test (mean score) (n=83)** | **Post test (mean score) (n=83)** | **t score** | **sig. (2- tailed )** |
| Menstruation and menstrual hygiene  | 2.3±1.0 | 4.1±0.8 | -13.903 | 0.000\* |
| Reproductive tract infections | 1.0±1.1 | 4.5±1.0 | -23.035 | 0.000\* |
| Sexually transmitted infections | 1.1±1.2 | 3.9±0.9 | -17.929 | 0.000\* |
| Other reproductive morbidities (Cervical cancer, uterine prolapsed , Abortion) | 0.2±0.7 | 2.4±1.1 | -16.809 | 0.000\* |
| Total Score | 3.9±2.4 | 11.0±2.1 | -25.693 | 0.000\* |

(\*p<0.05)

Provide your questionnaire.