

Population Based Study of Cervical Cancer Screening in Bharatpur, Nepal

Abstract

Cervical cancer is the most common form of cancer among women in developing countries. Hospital based data in Nepal also showed cervical cancer is most commonly occurring cancer among women in Nepal. Pap smear is the very significant screening test for reduction of incidence and mortality from cervical cancer but many developing countries failed to obtain high coverage of target population. Hence failed to achieve major impact of cervical cancer screening. National guidelines for cervical cancer and prevention in Nepal is formulated in 2010 and set target population age range of 30-60 with 50% coverage of target population with in a five years span. This study was aimed to elicit baseline survey of cervical cancer screening in a locale where resource for cervical cancer screening is easily available. Population based cross sectional study was done from October 2006 to March 2007. 1547 ever married women aged 16–59 were selected with cluster randomization procedure from Bharatpur municipalities, where BPKMCH (BP Koirala Memorial Cancer Hospital) is located. Free cervical cancer screening was conducted in collaboration with International Agency for Research on Cancer (IARC) France and BPKMCH. Ethical clearance was obtained from Nepal Health Research council. Interviews were performed using a standard questionnaire to elicit required information. Out of 1033 participants 394 were 16-29 years old. Among them 117 (30%) had at least one Pap test prior coming to the clinic. 16(4%) were age 16-19, 42(11%) were age 20-24 and 59 (15%) were age 25-29. This concludes Present opportunistic cervical cancer screening in Bharatpur is directed towards screening significant proportion of women with less risk.

Keywords: Cervical Cancer, Screening, Coverage, Nepal

Introduction

Cervical cancer is the cancer that occurred in the lower one third of uterus. According to Alliance for Cervical Cancer Prevention (ACCP) 2004, cervical cancer is second most common form of cancer in women worldwide and most common form of cancer in women in virtually all developing countries[1]. Approximately 12% of all cancers in women are due to cervical cancer. Central and south America, the Caribbean, Sub-Saharan Africa part of Oceania, south and south east Asia are the regions with highest incidence rates of cervical cancer-over 30 per 100,000 women[2]. This shows that Cervical Cancer is an important public health problem among these developing countries. According to World health organization

(WHO), 2002 China and India had 131,500 and 125,952 new cases of cervical cancer per year respectively [3]. Based on these two neighbor countries incidence data and based on similar socio-cultural pattern between Nepal and India, we can predict that Nepal must have alarming incidence rate for cervical cancer. This is further supported by finding in the hospital based cancer registry in B.P.Koirala Memorial Cancer Hospital (BPKMCH), Cervical cancer is the most frequently detected malignancy in Nepal [4]. Population based cancer registry is not available in Nepal and also prevalence and incidence of cancer at population level is not yet known. A population based study including 5000 women aged 30-59, carried out in 2003 in

*Ang Tshering Sherpa**
*Balman Singh Karki **
*Johanne Sundby ***
*Mari Nygard***,*
Silvia
*Franceschii****,*
*Gary Clifford******
**KIST Medical*
College, Nepal
***University of Oslo,*
Norway
****Cancer Registry,*
Norway
*****International*
Agency for Research
on Cancer (IARC),
France
Corresponding
author:
Ang Tshering Sherpa(
Lama)
Community Medicine
Department
KIST Medical College

collaboration between BPKMCH and International Agency for Research on Cancer (IARC) found 2.5% prevalence for precancerous lesion and 0.12 % for invasive cancer.

Primary prevention, early detection through increased awareness, organized screening programme, diagnosis and treatment are four components of cervical cancer control.

Progression from cervical lesions to invasive cancer is a slow process and most often it is asymptomatic in its early stages. Therefore an early detection and treatment of these asymptomatic lesions can only be possible if women are given opportunity to have cervical cancer screening at an early stage. According to WHO, screening is a public health intervention used on a population at risk, or target population to identify individuals with high probability of having or developing a disease but not undertaken to diagnose a disease. Thus screening is the process by which a test is applied to select out asymptomatic individuals at risk of having or developing a certain disease.

Several tests such as Visual inspection with acetic acid (VIA), Visual inspection with Lugol's iodine (VILI), Human Papilloma virus deoxyribonucleic (HPV DNA) test and Pap smear test can be used in screening for cervical cancer. But to date, the Pap smear is the only test that has been used in large population for more than 50 years and it has shown tremendous effect in reducing incidence and mortality from cervical cancer. According to IARC estimate, among well-screened women aged 30-64 years, Pap smear screening prevented 80% of cervical cancers [5].

Organized screening programme was started as early as 1949 in British Columbia in Canada. By 1960 there were screening programme in much of Scandinavia. A sharp decline in the incidence rate and mortality rate of cervical cancer was observed in many developed countries within the last 40 years due to organized screening program. The Nordic countries are exemplary in this respect. Nordic countries (Iceland, Finland, Sweden, Denmark) which have initiated organized screening program much earlier around 1960 showed higher rate of reduction in incidence and mortality of cervical cancer, compared to Norway where organized screening was initiated much later around 1994 [6,7]. Study conducted in Norway has also shown that increase coverage of target population has significant role in reducing invasive cervical cancer[8].

Despite tremendous positive impact of cervical cancer screening in developed countries most middle income developing countries as early as 1970 such as Cuba, Mexico, Colombia etc, have seen no substantial decrease in mortality from cervical cancer. This is attributed to unrealistic notion of frequent cervical cancer screening offered to targeted women of wide range of years (20-65)[9]. A study pertaining to African country also showed that the existing program are failing to achieve a major impact due to relying on opportunistic screening of relatively young women; lesser target for women in risk groups (women in their thirties and four tees) and low level of coverage with at least once

in a lifetime screening for at risk women[10].

BPKMCH, which is founded in 1992, is the first national cancer center in Nepal. The hospital is involved in diagnosis, therapeutics, preventive and palliative care of cancer patients. Therefore this study aimed to conduct the survey of cervical cancer screening in a locale where resource for cervical cancer screening is easily available.

Methods

This study is part of Human Papilloma virus study in Bharatpur Nepal [11]. Sample size was calculated based on 2.5% prevalence of precancerous lesion for cervical cancer in this area. The previous prevalence study was carried out by BPKMCH and IARC in 2003 [12].

Considering 2.5% prevalence rate, 95% confidence interval and 0.01 maximum tolerable errors we derived 937 as the required sample size. But considering possible decrease response rate or refusal to undergo gynecological examination we increased our sample size by 65%. Thus we took total of 1547 married women in our study.

Given the fact that the demographic distribution of the population is not well known house mapping is done in chosen clusters. Each household was numbered and married women 16-59 were invited for cervical cancer screening.

Pilot study was conducted for 10 women. At this time we assessed interviewer bias, questionnaire design flaws, non response problem and logistic and technical problem. These problems were corrected prior conducting the real study.

Two Female Community Health Volunteers (FCHV) from ward number eleven were chosen to invite all eligible women. Door to door personal visit was done one day before the appointment for screening. Each day FCHV visited 10-20 household and distributed the invitation card to those eligible women who were willing to participate. Next morning FCHV accompanied the participants to the cervical cancer screening clinic which was set in Muktinagar for this project. All participants were asked to sign informed consent. If a participant accepts to either cervical cancer screening or just respond questionnaire were included in the study. Structured interview questionnaire were used for data collection. The questionnaire were adapted from previous study questionnaire used for Women's health survey in Norway and questionnaire used for assessment of reproductive morbidity in Nepal conducted by united nation population fund, German agency for technical cooperation and ministry of health, Nepal[13].

Questionnaires prepared in English were converted into Nepali language and these sets of questions converted into English and Nepali were further checked by three Nepalese doctors and concluded exact translation. Socio-demographic, reproductive health characteristics, knowledge, awareness and barriers to seek cervical cancer screening were included in the questionnaire. Participants were interviewed in a confidential manner in complete privacy in a separate room by female interviewers. Those who consented for cervical cancer screening were undergone Pap smear. Pap smear collection was done by senior nurse (five years work experience in family planning clinic) and medical officer (one year work experience in gynecology and obstetric department in tertiary hospital). Same day after fixing the slides in the clinic they were sent to BPKMCH for slide reading. At the end of day all questionnaires were checked to see the completeness by finding missing answer and double data entry was done to avoid recorder bias.

Coding was done with fixed number of pre-specified values and question that does not apply were coded as 88 and question that was not answered were coded as 99. All erroneous values aside from these specified values are checked and correction was done.

Data screening were done by producing a histogram and scatter plot of most of the variable to see its normality, average value, outliers and missing values.

Descriptive statistics of variable were obtained by using Statistical Package for Social Sciences (SPSS), version 16.

Results

A) Socio- demographic history of participant

Out of 1033 participants 540(52.3%) of participants were from slum area and 493(47.7%) were from non slum area.

Religion wise 871(84.3%) Hindu, 135(13.1%) Buddhist, 24(2.3%) Christian and 3(0.3%) were Muslim.

Marital status showed 931(90.1%) married, 26(2.5%) divorced, 31(3.0%) widow and 45(4.4%) were remarried.

Occupation wise 828 (80.15%) housewife, 105(10.2%) labour worker, 61(5.9%) shopkeeper, 36(3.5%) clerical worker and 36(3.5%) were in higher level job.

Level of education showed 570 (55.2%) of participants were literate and among them 184(17.8%) primary level, 231(22.4%) Secondary level, 76(7.4%) School Leaving Certificate (SLC) and 79 (7.6%) with college degree.

B) Reproductive history of participants

132 (12.8%) of participant had more than one life time sexual partner. Mean age at marries was 17.1 years with SD of 3.3 years. Mean age at marries was almost same as mean age at first sex 17.4 years with SD of 3.1years. Median age at first childbirth is 19 years with inter quartile range of 4 years and mean for parity is 2.6 with SD of 1.5. Mean age at menarche 14.1 years with SD of 1.6 years and menopause at 46.8 years with SD of 2.1.

C) Smoking history of participant

205 (20%) of participant had experienced smoking during their life time and among them and among them 127 (12%) are current smokers.

D) Husband's history reported by participants

When asked about husband's history, participants mentioned that 382(37.2%) of their husband currently live somewhere else and 276 (26.7%) of their husband has other wife or cohabitant.

Husband's occupation involves 280 (27.1%) labour worker, followed by 223 (21.6%) migrant worker, 127(12.3%) clerical work, 94(9.1%) unemployed,86(8.3%) shopkeeper, 59(5.7%) farmer, 35(3.4%) higher level job and 29(2.8%) driver.

E) Proportion of participants who had at least one Pap test prior coming to the screening clinic

Out of 1033 participants 628 (61%) never had Pap test and 405 (39%) had at least one Pap test during their life time. Among those who had at least one Pap test 288 (71%) were participants with 30-59 years old and 117(29%) were 16-29 years old. Among 117 16-29 years old who had at least one Pap test 16(4%) were age 16-19, 42(11%) were age 20-24 and 59 (15%) were age 25-29.

F) Reason for not having Pap smear by the participant:

Total of 1033 participant, 977 had Pap smear test and 56 refused the test. Out of them 41.1%are ashamed of having gynaecological examination, 29% having fear of being diagnosed as cancer, 15.8%had recent Pap test and 12.5% were having heavy menstruation but they did not return for follow up test.

G) Pap smear result

Out of 977 participant showed 776 (79.4%) Normal, 158 (16.2%) Inflammatory, 27 (2.8%) ASCUS (Atypical squamous cells of Undetermined significance), 1(0.1%) ASC-H(Atypical squamous cells of high grade), 2 (0.2%) LSIL (Low grade squamous intraepithelial lesion), 5 (0.5%) HSIL (High grade squamous intraepithelial lesion) and 8 (0.8%) were unsatisfactory smear.

Proportion of participant with ASCUS/ASCUSH/LSIL was highest 3.8% in age group 15-29 followed by 3.4% in 45-59 and 2.31% in 30-44 years old. Where as proportion of participant with HSIL was highest 0.69% in age group 30-44 followed by 0.56% in 45-59 and 0.27% in 15-29 years old.

Discussion

A national guideline for cervical cancer screening and prevention in Nepal was formulated in 2010 by family health division, Department of health service Nepal. It has set target population of 30-60 years with coverage goal of 50% in next five years [14]. Our study showed 288 (71%) were participants with 30-59 years old had at least one Pap test prior coming to the clinic. In 2003, cryotherapy study was conducted by BPKMCH and IARC. During that time 5000 women received cervical cancer screening. Some of them also attended our cervical cancer screening clinic. This may have contributed the relatively high coverage of at least one Pap test among aged 30-59 in our study.

Cervical cancer screening of relatively young women was also shown in our study. 117 (29%) of age group 16-29 already had at least one Pap test. Among them 58(49.57%) were 16-24 years old.

Population based case control study [15] and Study done in African country [10] has shown that screening of relatively young women has little impact on reduction of invasive cervical cancer.

According to WHO to have successful screening program increase coverage of target population is one of the important elements. Study conducted by IARC shows that the reason that several developing countries failed to gain impact of cervical cancer screening is impracticable notion of frequent cervical cancer screening offered to targeted women of wide range of years (20-65)[9]. One study showed that maximum frequency of cervical cancer cases in Nepal were found in the age group 40 to 49 years[16]. Considering the age of occurrence of cervical cancer among women in Nepal and result of several other study finding that of screening young women was hindering factor to increase coverage for high risk women, present trend of screening too young women do not justify the prevention of cervical cancer in Nepal. Therefore this kind of norm should be discouraged.

Cervical cancer is the first cancer recognized by the World Health Organization (WHO)

to be 100% attributable to an infection[17]. High risk Human Papilloma virus (HPV) is the main cause for cervical cancer[5,18].

Our own population based HPV study in this area also showed that HPV prevalence was 8.6% and HPV 16 was the most common type that causes cervical cancer. Same study also showed that husband's extramarital affairs were significantly associated with HPV positivity[11]. Our study finding of age at marriage which is equivalent to age at first sex is found 17.1 years with SD of 3.3 years and 276 (26.7%) of participant reporting that their husband has other wife or cohabitant signifies that these cofactors of cervical cancer are prevalent in this area. This signifies that these women are prone to acquire sexually transmitted infection including HPV. Therefore to prevent cervical cancer behavioural factor that contribute acquiring HPV should be discouraged and since husband's extramarital affair is prevalent involvement of husband in prevention program should be encouraged.

According to WHO one of the requirements of successful screening program is to ensure high levels of coverage (80% or more) of the target population to be screened [19]. To achieve high coverage understanding barriers for cervical cancer screening is utmost necessary. In our study we found shyness and fatalistic attitude toward cervical cancer are the two most important barrier which cause them to refuse cervical cancer screening. Fatalistic attitude toward cervical cancer signifies that the participants have not understood the concept of screening that it is not used to diagnose a disease but to test population at risk to identify individuals with high

probability of having a disease. Therefore our study would like to recommend involvement of these factors in cervical cancer health education program.

National cancer Registry Programme (NCRP) of BPKMCH has shown that cervical cancer is among the top ten cancers and is the number one cancer among women in Nepal[14]. Considering the magnitude of the problem prevention of cervical cancer is an important issue and evidence based preventive strategies should be followed to have better impact[19]. BPKMCH is the center of excellence for cancer in Nepal[20]. Therefore availability of adequate health infrastructure and expert human resources are opportunities in this area to conduct cervical cancer screening. But despite its availability for more than decades lack of knowledge about cervical cancer screening, behavioral risk factors such as husband's extra marital affair and early age at marries, tobacco smoking among participants is quite prevalent. These factors which are already known factor for acquiring cervical cancer should be prevented.

This study recommends policy makers to focus on health education and screening of high risk women rather than screening women with wide range of ages, so that goal of screening target population as per National Guidelines for Cervical Cancer Prevention in Nepal can be accomplished in shortest possible time and maximum benefit can be obtained by women and their families.

References:

1. Alliances for cervical cancer prevention (ACCP), 2004. Planning and implementing cervical cancer prevention and control program. A manual for managers.
2. Ferlay J et al, editors. Globocan 2000: Cancer incidence, mortality and prevalence worldwide. IARC Cancer Base No. 5. Version 1.0. IARC Press, 2001. Lyon, France.
3. World Health organization (2002) *National Cancer control Programmes: Policies and managerial guidelines*. World Health Organization monograph, 2nd edn. Geneva: WHO.
4. Annual Report, B.P. Koirala Memorial Cancer Hospital, Bharatpur Nepal; 2010.
5. Cervical Cancer prevention Fact Sheet. Risk Factors for Cervical Cancer: Evidence to date. Alliance for Cervical Cancer Prevention. 2004 May.
6. Sigurdsson K. Effect of organized screening on the risk of cervical cancer. Evaluation of screening activity in Iceland, 1964-1991. *Int.J.Cancer*. 1993; 54: 563-570.

7. Sigurdsson K. The Icelandic and Nordic cervical screening programs: trends in incidence and mortality through 1995. *Acta Obstet Gynecol Scand*, 1999; 78:478-485.
8. Nygard JF, Skare GB, Thoresen SØ. The cervical cancer screening program in Norway, 1992-2000: changes in Pap smear coverage and incidence of cervical cancer. *J Med Screen*; 2002; 9:86-91.
9. Sankarnarayan R, Budukh AM, Raj Kumar R. Effective screening programme for cervical cancer in low- and middle- income developing countries. *Bulletin of the World Health Organization*. 2001; 79:954-962.
10. Chirenje ZM, Rusakaniko S, Kirumbi L et. al. Situational analysis of cervical cancer diagnosis and treatment in East, central and South African countries. *Bulletin of the World Health organization* 2001; 79:127-132.
11. Sherpa AT, Clifford GM, Varicella S, Franceschii S, Nygard M, Karki BS, et al. Human Papiloma virus infection in women with and without cervical cancer in Nepal. *Cancer causes and control*. CCC.2010 Mar, 21(3)323-30.
12. B.P. Koirala Memorial Cancer Hospital (Nepal). *Annual Report 2003*. Chitawan: Cancer hospital; 2004.
13. Reproductive Morbidity: A neglected issue? Report of a clinic based study in a far western Nepal HHD/GTZ/UNFPA 2002.
14. Family Health Division, Ministry of Health and Population. National Guidelines for Cervical Cancer Screening and Prevention in Nepal, 2010.
15. P Sasieni, A Castanon, J Cuzick. *BMJ: British Medical Journal*. 2009; 339.
16. Jha AK, Jha JJ, Bista R et al. A Scenario of Cervical Carcinoma in a Cancer Hospital. *Journal of Nepal Medical Association*. 2009; 48(175):199-202.
17. Bosch, F. X., Lorincz, A., Munoz, N., Meijer, C. J. & Shah, K. V. The causal relation between human papillomavirus and cervical cancer. *J. Clin. Pathol*. 2002;55, 244-265
18. Clifford GM, Gallus S, Herrero R, Munoz N, Snijders PJF, Vaccarella S et al. Worldwide distribution of human papillomavirus types in cytologically normal women in the International Agency for research on Cancer HPV prevalence surveys: a pooled analysis. *Lancet* 2005, 366:991-998.
19. WHO. Cervical cancer screening in developing countries: report of a WHO consultation, 2002.
20. Piya MK, Acharya SC, Oncology in Nepal. *South Asian J Cancer*. 2012; 1:5-8.