RESEARCH COMMUNICATION

Knowledge, Attitude and Practice (KAP) Concerning Cervical Cancer and Screening among Rural and Urban Women in Six Provinces of the Democratic People's Republic of Korea

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Abstract

Background: This study assessed women from the Democratic People's Republic of Korea for: (i) their level of knowledge of cervical cancer and attitudes and practices concerning cervical screening (KAP); and (ii) differences in KAP between rural and urban groups. Methods: In a descriptive cross-sectional study, a purposive sample of 200 women in 6 provinces of DPRK (rural: n=99, urban: n=101) were interviewed using a standardized questionnaire. Differences between proportions were assessed using the $\chi 2$ test. Significance was defined as $p<0.05$. Results: 63% of rural and 60% of urban participants had heard of cervical cancer ($p>0.05$). 42% knew that it is the most common cancer of the female reproductive tract, 55% knew that all women are at risk, but only 36% were aware of cervical cancer's preventability. Some 13% of rural and 29% of urban respondents had heard of cervical cytology testing ($p<0.001$). Only 6% of participants had ever received a cervical cytology smear. Among the reasons for not screening, 48% mentioned a lack of awareness of cervical cytology; 47% their dislike of pelvic examinations; 17% of rural and 31% of urban interviewees reported the absence of symptoms ($p<0.05$); and 62% of rural and 0% of urban women mentioned travelling long distances to service delivery points ($p<0.001$). Conclusions: There is a reasonable level of knowledge of cervical cancer among North Korean women; however, there are major gaps regarding awareness of its preventability and actual uptake of cytology screening services. There are no significant differences between rural and urban women with regard to their KAP. Large scale health promotion campaigns are needed to educate women and the community about cervical cancer and its preventability through screening. The national health care system needs to ensure that screening services are effective, accessible, feasible and acceptable to women.

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Introduction

For many developing countries, cervical cancer is the most common cancer among women (Ferlay et al., 2008) and it is in these countries that 85% of the estimated 530,000 new cases and 275,000 deaths occurred worldwide (2008).There is a dearth of data on the Democratic People's Republic of Korea (DPRK) in peer-reviewed medical journals, let alone information on women's health or cervical cancer. Most information available on DPRK is found in United Nations publications and reports. Incidence and mortality rates of cervical cancer in DPRK, according to the International Agency for Research on Cancer (IARC), were 6.6 and 3.3 per 100,000 in 2008.

Cervical cancer is caused mainly by infection with certain strains of the human papillomavirus (HPV), a predominantly sexually transmitted virus that infects the epithelial cells of the cervix uteri that can result in precancerous lesions and invasive cancer (Cogliano et al., 2005). Most cervical lesions do not progress to cancer however, and those which do, progress slowly, making cervical cancer largely preventable through effective screening (IARC, 2004). Marked decreases in cervical cancer incidence and deaths have been achieved by systematic population-based cytology screening

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Table 1. Demographic Characteristics of Participating Women, Demogratic People's Republic of Korea, 2009

Characteristic	Rural (n=99)	Urban (n=100)
Age (years)		
Mean	42.6	40.7
Range	25-66	23-63
Married (%)	98.0 (97)	96.0 (97)
Education (years)		
Mean	12.4	13.2
Range	11-19	11-18
Pregnancies (%, n)		
0	2.0 (2)	8.0 (8)
1	10.1 (10)	11.0 (11)
2	36.4 (36)	38.0 (38)
3	29.3 (29)	18.0 (18)
≥4	22.2 (22)	26.0 (26)

p>0.05 (not significant) for all urban-rural comparisons

programmes in developed nations, from as early as the 1960s (Johannesson et al., 1978; Parkin et al., 2002) In the Southeast Asian and Pacific region, a number of developed countries, autonomous territories and certain cities have experienced similar reductions (Wang et al., 2003; Yang et al., 2003; Aklimunnessa et al., 2006; Taylor et al., 2006) This has not been possible in most low-resource settings, including DPRK, due to the lack of screening or ineffective cytology screening programmes (Sankaranarayanan et al., 2001; WHO, 2002).

The cervical cytology smear is a commonly used screening method worldwide (WHO, 2002).The screening procedure is simple and straightforward, but can be perceived by women as invasive as it requires a pelvic examination. A well organized programme for processing smears is required, with skilled personnel for the correct interpretation of results and ensuring appropriate intervention. Such a programme must be part of a comprehensive public health environment where the target population is educated and informed about the availability of the procedure and its benefits (Alliance for Cervical Cancer Prevention, 2004). Lack of awareness of cervical cancer, its preventability and the benefits of the screening procedure, as well as cultural and geographical barriers, may result in poor utilization of screening services, even when these are available.

The population of DPRK is racially homogeneous (Minority Rights Group International, 2007), and was estimated in 2008 to be 23.9 million, of which 63% live in urban areas (UNFPA, 2008). DPRK has a national public health system with provision of health care services at no direct cost to the patient (UNICEF DPRK, 2006). Health expenditure in 2004 represented 6.3% of the gross domestic product (WHO Regional Office for South-East Asia, 2007). Among developing countries, DPRK's health care system has been ranked highly on multiple United Nations health assessments (Macfarlane et al., 2003).The general level of education of the population is high and access to health care exists, even in remote areas. Major problems stem from a lack of resources and outdated principles and techniques (Davies, 2000). According to the Korean policy on cervical cancer prevention and control, "regular preventive screening" should take place "once a year for women aged 30 to 60 years". There is no published information on how this policy is implemented and how it affects women in relation to cervical cancer. The objective of this research is to assess: (i) the level of knowledge concerning cervical cancer and attitudes and practices (KAP) among women regarding cervical screening; and (ii) whether there is a difference in KAP between rural and urban women. The results of this survey will inform the design of appropriate screening services and health promotion programmes, both of which will be integral to national efforts and activities and services to prevent and control cervical cancer.

Materials and Methods

A cross-sectional survey of 200 women using structured interviews was conducted. Based on a literature review and selection of published KAP materials, a questionnaire was designed to examine the level of awareness of cervical cancer symptoms, causes, risk factors, preventability, and attitudes and practices towards screening. The questionnaire and study protocol were field tested, and received ethics and administrative approval by the Korean Ministry of Public Health.

To avoid gender barriers and facilitate the communication process, 11 female interviewers were recruited from among staff and volunteers of the Korean Family Planning and Maternal and Child Health Association (KFP&MCHA), a Member Association of the International Planned Parenthood Federation (IPPF). The interviewers had professional backgrounds in nursing, medicine and teaching. To minimize interviewer bias, they received in-depth training on how to conduct the survey.

The purposive sampling of participants and locations had the objective of interviewing an approximately equal number of rural and urban women. Although sampling was purposive, it was nevertheless widely distributed in both rural and urban areas in six out of the nine provinces in DPRK. No more than three women were sampled from particular work sites, apartment buildings, villages, market places or schools, 96 sites in all. The interviews took place between November 2008 and January 2009.

Information was collected on hard-copy questionnaire forms. Data were entered and analyzed using Epi Info, Version 3.3.2. The $\chi 2$ test was used to analyze categorical data and the t-test for the analysis of continuous variables. The level of statistical significance was defined as a two-sided p-value of <0.05.

Results

Of 279 women approached to participate in the

Table 2. Proportions (%) with Knowledge of Cervical Cancer, its Symptoms and Causes, Rural and Urban Women, Democratic People's Republic of Korea, 2009

Knowledge Item	Rural (n=99)	Urban (n=100)
Heard of cervical cancer	62.6 (62)	60.4 (61)
Source of information if heard of cervical cancer:	[n=62]	[n=61]
Health care provider	72.6 (45)	65.6 (40)
Family relatives	43.5 (27)	54.1 (33)
Media	43.5 (27)	49.2 (30)
Friends	19.4 (12)	26.2 (16)
	[n=99]	[n=100]
Cervical cancer is the most common female reproductive cancer	39.4 (39)	43.6 (44)
All women are at risk of cervical cancer	54.5 (54)	54.5 (55)
Know someone with cervical cancer	3.0 (3)	6.9 (7)
Symptoms of cervical cancer include:		
Abnormal vaginal discharge	35.4 (35)	37.6 (38)
Vaginal bleeding	33.3 (33)	39.6 (40)
Abdominal pain	27.3 (27)	20.8 (21)
Bleeding after sexual intercourse	25.3 (25)	27.7 (27)
Bleeding after menopause	18.2 (18)	21.8 (22)
Cervical cancer is caused by a STI	2.0 (2)	4.0 (4)

p>0.05 (not significant) for all urban-rural comparisons; STI, Sexually Transmitted Infection

Table 3. Proportions (%) with Knowledge of Cervical Cancer Prevention, Rural and Urban Women, Democratic People's Republic of Korea, 2009

Knowledge Item	Rural (n=99)	Urban (n=100)
Cervical cancer can be prevented	30.3 (30)	41.6 (42)
Heard of cervical cancer testing	13.1 (13)*	28.7 (29)*
If heard of cervical cancer testing is it used for	[n=13]	[n=29]
Treatment of cancer	7.7 (1)	10.3 (3)
Screening for cancer or precancer	84.6 (11)	72.4 (21)
Both screening and treatment	7.7 (1)	17.2 (5)

* P<0.05 (significant) for rural-urban comparison

survey, 200 women were interviewed for the study. Half (99) were from rural and half (101) from urban areas. There were no statistically significant differences in the demographic characteristics of the rural and urban groups (Table 1). Their combined mean age was 41.6 years, which ranged from 23 to 66 years overall. Almost all women were married (97%). The mean number of years of education was 12.8, with an overall range from 11 (end of high school) to 19 years. Rural and urban women had similar numbers of pregnancies.

Knowledge

There was no statistically significant difference between rural and urban women in their knowledge of cervical cancer (Table 2). Over half of all respondents (62%) had heard of cervical cancer. Their main source of information came from their health care provider (69%). 42% knew that cervical cancer is the most common cancer of the female reproductive tract. More than half of interviewees were aware that all women are at risk of cervical cancer (55%). Only a very small proportion knew that cervical cancer is predominantly the result of a sexually transmitted infection (3%). Less than 40% in both groups were aware of the symptoms of cervical cancer.

With regard to cervical cancer prevention (Table 3), a majority of respondents did not know that cervical cancer can be prevented (64%). Although the difference is not statistically significant (p>0.05), more urban (42%) than rural interviewees (30%) knew about the preventability of cervical cancer. A significantly higher proportion of rural women heard of cervical cytology testing (29% rural, 13% urban, p<0.01), although the level of awareness overall was low. Among those who heard of cervical cytology testing, a majority (overall) knew of its purpose (76%).

Attitudes and practices

Only 6% of all women interviewed reported ever receiving cervical cytology testing. The main reasons for not screening were lack of awareness of cytology testing (48%), dislike of pelvic examinations (47%) and absence of symptoms (17% rural, 31% urban, p<0.05). Long travel distance to service delivery points was reported as a barrier by rural women only (62% versus 0.0%, p<0.001). Interviewees in both groups reported that the gender of the service provider influences their willingness to have a pelvic examination (62%); all rural and 89% of urban women reported preferring a female service provider (of those who expressed an opinion) (p<0.01).

Discussion

The results of this KAP survey suggest that despite the high level of education among both rural and urban respondents, there are a number of knowledge deficiencies regarding cervical cancer, its symptoms, cause, and preventability. The study indicates that there is little difference between rural and urban women in relation to their KAP. The findings suggest that even with a reasonable level of knowledge of cervical cancer among interviewees, there are important gaps regarding the awareness of cervical cancer's preventability and subsequent translation into actual uptake of cervical cytology services.

Primary prevention using the HPV vaccine is not yet feasible in most low-resource countries, including DPRK, due to its high cost. The HPV vaccine and related educational information consequently are not yet available to women in DPRK. Furthermore, the HPV vaccine does not cover all oncogenic HPV types, does not prevent carcinogenic effects in women already infected with HPV, and the duration of protection it confers is not yet known. Therefore, screening for potential

precancer will still be required. Secondary prevention through screening services is available in DPRK and recommended in the national policy on cervical cancer. That is, women are screened by visual inspection (without cervical staining or cytology), especially if symptoms are present. Cytology or histology is performed only if abnomalities are visualized (Tran et al., 2012).

The results of this study indicate that women's uptake of these screening services remains low, which correlates with the findings of KAP studies conducted in other low-income countries (Audu et al., 1999; Wellensiek et al., 2002; Gichangi et al., 2003; Tebeu et al., 2008). There appears to be an issue of accessibility to services for rural women due to long travel distances, suggesting that rural women would incur additional travel and productivity costs to access screening services, even though health care is provided free of charge to the population. The results also suggest a problem with acceptability of pelvic examination for a majority of women: those who expressed such concerns would mostly prefer a female service provider to carry out the examination.

Further research is needed to explore other factors that could account for the low uptake of cervical cytology testing, besides women's attitudes toward cervical screening and the limited awareness of cervical cancer preventability. For example, the practice of health care providers of cervical screening may also contribute to this result, as a recent study has shown that health care providers in DPRK offered cervical cytology testing only if the cervix appeared abnormal on unaided visual inspection without staining (albeit in line with national policy). Most pre-cancerous lesions will look normal with such an approach and the number of women being tested with cytology would be limited as a consequence (Tran et al., 2012).

In terms of recommendations, there is a need for a large scale health promotion campaign to educate women and communities about cervical cancer and its preventability by effective screening of all well women. Mobile outreach clinics with integrated screening services offering visual inspection with acetic acid (vinegar) staining of the cervix (VIA) followed by immediate treatment of abnormal findings, such as by cryotherapy (using widely available compressed CO_2), in a screen-and-treat approach, could form a strategy to address the issues of access hindered by long distance and travel time (Royal Thai College of Obstetricians and Gynaecologists, 2003), and also the limited infrastructure available for a screening program based on cervical cytology (Pap testing). Instead of the yearly pelvic examinations currently recommended in the national guideline, the screening interval for well women could be every five years or more, and still be cost-effective (Mandelblatt et al., 2002).This would minimize the number of pelvic examinations and make screening services more acceptable to women. While the current national policy on cervical cancer stresses the importance of regular preventive screening, it is necessary not only to provide these services, but also to ensure that they are effective, accessible, feasible with the available resources, and acceptable to women. And it is equally crucial for the population to be mobilized and educated on cervical cancer.

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