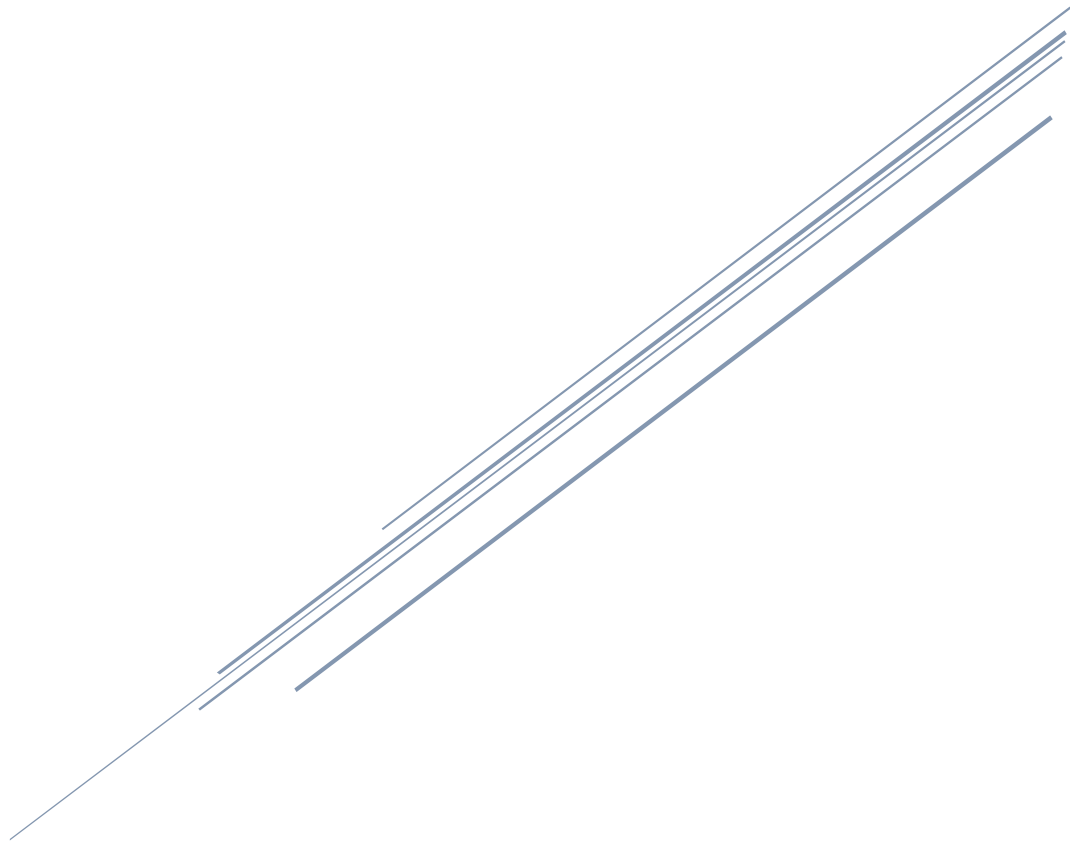


**Knowledge about and attitudes towards cervical
cytology test among young women in Qingdao, China:
A qualitative interview study**



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ABSTRACT

Background:

Cervical cancer is the third most common cancer among women worldwide. It is one of the leading types of cancer in China. According to the Chinese National Health and Family Planning Commission, 130,000 new cases would be estimated every year and 30,000 women would die from the disease. There has also been a significant increase among Chinese women below 35 years old. Despite the cervical cytology test has been considered as an effective method to prevent the cancer, some previous studies showed that only one in five women in China reported ever having had a cervical cytology test.

Aims:

- to explore young Chinese women's general knowledge about and attitudes towards taking a cervical cytology test in cervical screening, and
- to explore their thoughts about potential improvements of information and services of cervical screening

Method:

It was a qualitative study in which semi-structured individual interviews were conducted in a mid-sized city called Qingdao in the east of China. 17 women aged between 21 to 36 participants took part in the study. The data was analysed based on Systematic Text Condensation (STC) in order to describe the participants' experience.

Results:

The findings in the current study showed that most of the participants did not have adequate knowledge about the cervical cancer and the cervical cytology test. Cultural factors, such as feelings of embarrassment and assumption of low-level risk, had a significant impact on the participants' acceptance of receiving a cervical cytology test, especially among unmarried participants. The inconvenience of obtaining the cervical screening service was considered as another obstacle. In order to raise the awareness in the future, several suggestions were given by the participants, such as getting the health professionals involved and maximizing the utility of the internet.

Conclusion:

The presented study suggested some possible reasons of low attendance rate of cervical cytology test in China. It has highlighted an urgent need to improve the knowledge about cervical cancer and cervical cytology test among Chinese young women. The service should become more accessible to both married and unmarried women. Cooperation among the local government, communities and health service providers is required in order to divert the flow of the patients from the large hospitals. Interventions from communities are also needed to ensure these women receive cervical cytology test on regular basis and follow-up takes place if the test is abnormal.

Key words: Cervical cancer, Cervical cytology test, Knowledge, Attitude

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1. INTRODUCTION

1.1 BACKGROUND

Cervical cancer is the third most common gynaecological cancer worldwide. Every year approximately half a million women are diagnosed and 275,000 are expected to die from the disease^[1,2]. There is a significant risk for invasive cervical cancer among women with no or limited access to cervical screening^[3]. In China, cervical cancer is ranked as the second most common cancer among women^[4]. The incidence rate of cervical cancer among young Chinese women aged 35 or younger is rising^[4,5]. However, only one in five women reported ever having had a cervical cytology test performed^[6]. With this high incidence rate of cervical cancer, it is important to understand what are the possible causes of such low acceptance of cervical screening among young Chinese women and what possible intervention can be made to improve their attendance.

What is cervical cancer?

Cervical cancer is a disease where cells in cervix develop abnormal growth with the ability to invade surrounding tissue and spread to other organs. Persistent infection with high-risk-HPV infection is necessary for the development of premalignant and malignant lesions of the cervix^[7-12]. Cervical dysplasia is a medical terminology to describe the abnormal change of cells in the lining cervix^[13]. It is referred as squamous intraepithelial lesion (SIL) with cytology and cervical intraepithelial neoplasia (CIN) under histological term. The mild cervical dysplasia normally requires no treatment and can resolve spontaneously. Whereas moderate-to-severe dysplasia needs further treatment to reduce the risk of developing cervical cancer^[14].

The current main methods of preventing cervical cancer include the cervical cancer screening and HPV vaccine. Detection and treatment of precancerous lesions may reduce the incidence and mortality of cervical cancer by over 80%^[15]. The incidence rates are however considerably different between high-income countries with an organized screening programme and LMICs (low- and middle-income countries) with no or limited screening. Developing countries bears 80% global burden of cervical cancer^[16,17]. Because of the success of introducing the screening programmes, the incidence and mortality of cervical cancer is much lower in developed countries^[15,17].

How is a cervical cytology test performed?

Cervical cancer is one of the most preventable cancers^[2]. The development of cervical cancer is usually a slow process from persistent hr-HPV infection, to CIN to invasive cancer. This provides an opportunity for screening to detect premalignant lesions and the cervical cancer at early stage. Sampling cells from the cervix for microscopic examination is the primary method to detect abnormal change of the cervix. The nurse or doctor slides a speculum into the vagina and obtain the cells with a spatula and/ or brush from the transformation zone located at the outer opening of the cervix ^[18]. The smear containing cervical cells can be detached to a glass for microscopy. Nowadays, the liquid-based cytology (LBC) has replaced the conventional smear test in many high-income countries. With LBC, the sample is placed into a liquid solution first to remove excessive blood, mucous and inflammatory cells before placing under the microscope. The advantage with LBC is that blood and mucus can be washed away and ease the evaluation of the cells. In addition, a hr-HPV test can be performed leading to better diagnostic. However, due to comparatively higher cost, women in developing countries have very limited access to LBC^[17].

The cervical cytology test is only one aspect to prevent cervical cancer and its effectiveness requires the full totality: continuing regular check-ups, investigating and treatment for abnormality, and follow-up with the targeted women^[19]. It is also recommended by World Health Organization (WHO) that it is more important to maximize coverage and assure complete follow-up of those women with abnormal screening test results than to increase the number of tests performed in a woman's lifetime^[20].

1.2 CERVICAL CANCER IN CHINA

Country profile

China, the second largest country in the world by land, lies in East Asia with the total coverage of 9.6 million square kilometres^[21]. The capital is based in Beijing and along with the other 33 provincial-level administrative units^[22]. China is ranked as no.1 by population (1.38 billion) and over half of the total population live in urban areas^[23]. Chinese culture is very diverse and comprises 56 ethnic groups.

In 2014, the total GDP of China was US\$10,380.380 billion, the total expenditure on health was 5.5% of total GDP, health expenditure per capita was US\$420, and out-of-pocket health expenditure was 32% of total expenditure on health^[24,25]. According to 2016 statistics, the life expectancy at birth was 75.44 years, birth rate was 11.91 per 1000, and under 5 mortality rate was 16.66 per 1000 birth^[26].

Cervical cancer in China

Cervical cancer remains as a leading form of cancer among Chinese women^[4]. According to the Chinese National Health and Family Planning Commission, it is estimated that 130,000 new cases will be diagnosed every year and 30,000 women will die from the disease. Based on the data from the National Cancer Registry Database (1989 - 2008), the crude incidence rate and mortality rate among Chinese women were increasing^[27]. WHO also estimates that 28.8% of total new cases worldwide will appear in China^[28]. It is reported that the incidence of cervical cancer was higher among women aged 35-45 than other groups^[29]. There has been illustrated a significant increase among women aged 35 and younger, from less than five percent in 1980s to nearly one third of total new cases in recent few years^[4]. Based on the Cancer Statistics in China, the incidence rate in East China, where our project was carried out, was 27% of a total of 98.9 thousands new cases^[30]. It was almost four times greater than Northwest China (7%).

Cervical cytology test in China

Despite that cervical cytology tests are available in all provinces of China, the coverage highly varies across regions and the screening programme has not been well-established neither on national nor provincial level^[4,31,32]. A study showed that the average screening rate was only 20.7% among Chinese women aged 18 and older. The age groups of 30-39 years and 40-49 years have gained the highest attending rates, that was, 30.1% and 28.6% respectively^[33]. Another study also confirmed that only one in five women reported ever having had a cervical cytology test. The rates of having the cervical cytology test were different from region to region: east China higher than middle and west China, and urban areas higher than rural areas, which may be explained by the local economic development and investment in healthcare^[27,33].

It was reported that most screenings received are either opportunistic or included in general well woman check-ups which are offered by the National Family Planning Program^[34]. In China, the shift to a market economy was accompanied by health insurance system reforming^[35]. Outpatient costs are mainly from out-of-pocket money, and only inpatient hospital bills are partially covered by the NRCMS (New Rural Cooperative Medical System). Outpatient bills are more or less compensated by different forms in cities, but not in rural areas. Residents from rural areas are therefore more reluctant to take the screening test^[36].

Intrinsic factors and cultural effect

McKiernan et al. addressed that the attendance of screenings would be affected by both intrinsic and extrinsic factors^[37]. The decision of receiving cervical cancer screening is a complex matter. Besides the extrinsic factors (accessibility and availability of screening programmes & services), it is also decided by those intrinsic factors including individual knowledge, awareness and perspectives about cervical cancer and cervical screening. Many studies have shown that women with certain knowledge about cervical cytology test are more likely to do the test and follow-up if it is abnormal^[38-40]. A study was carried in Licang District, Qingdao (where the present study was launched) and indicated that awareness of women health and general knowledge was lacking^[41]. Berger and Luckmann argued that the gynaecological examinations were unlike other medical examinations and had distinctive features of involving more pronounced questions of modesty and privacy^[42]. They pointed that these intimate parts of the body are also more *messy* compared with of other parts of the body, which can cause a certain level of embarrassment and many women are reluctant to attend the examinations. A cross-sectional survey launched in 2007 (n=167) suggested that there was a positive connection between the motivation of receiving cervical screening and belief of effectiveness of cervical screening. However it revealed inconsistency between the motivation and actual action among Chinese women^[34,43].

Facion & Katapodi also confirmed that culture could influence the attendance of cervical screening^[44]. With an over 3000 years of sexual suppression history, most Chinese people are conservative in sex and view sex as a *taboo*^[45]. The cervical cancer, which may imply sexual promiscuity, can cause embarrassment to Chinese women and they are reluctant to go for the screenings^[46-48]. One study was conducted in Hong Kong (Special Administrative Region of China) explained the cultural impact on attendance for cervical screening from both women's

and health professions' perspectives (n=54, n=28). The modesty, embarrassment and fatalism were considered as the barriers to attend the test^[13]. Twinn et al. argued that the low attendance of participating in cervical screening was because that many Chinese women feared being stigmatised. They explained that there was a widespread belief that the cervical cancer was in some way related to sexually inappropriate behaviour^[49]. The similar social issue was also found in some other countries^[50]. Meanwhile, Chinese culture has unrealistic low perceived susceptibility to reproductive cancers^[36,44,51]. Some studies also explored that many Chinese-Americans were reluctant to talk about health related problems and believed that such action might cause these to actually happen^[47,52]. However, a study also showed the attendance could be promoted by some other factors, such as marriage and childbirth^[13].

1.3 AIMS

Despite some studies were found to investigate women in Hong Kong and Chinese immigrants in western countries, the western culture may have some impact on the views and thoughts of these people, which may differ from the people who are living in mainland China. Hardly any specific project was launched to investigate knowledge and attitude among young Chinese women in region. There was a knowledge gap to be filled and the study was therefore introduced. The author believe that it is very important to explore these women's knowledge and attitude in order to raise their awareness towards cervical cancer and improve the attendance of cervical screenings in the future. This study consists of two aims:

- to explore young Chinese women's general knowledge about and attitudes towards taking a cervical cytology test in cervical screening, and
- to explore their thoughts about potential improvements of information and services of cervical screening.

2. METHOD

2.1 RESEARCH DESIGN

This was a qualitative study, which is defined as an approach to describe and analyse the culture and behaviour of humans and their groups from the participants' perspective^[54]. This method is getting more recognized in medical and public health field and "*it offers insight into emotional, social and experiential in health care to determine what, how and why*"^[54]. The study aimed to understand what young Chinese women know about cervical cancer and cervical cytology test, how they had gained the information, and what the reasons are to receive or not attend the test. The qualitative method was considered more appropriate to explore the research questions and allow the researcher to gather first-hand information. This study was conducted in a mid-sized city called Qingdao in the east of China. The method applied (recruitment, data collection and the analysis) will be presented as followed.

2.2 SAMPLE AND RECRUITMENT

It was designed to recruit 15 to 20 women aged 25 to 35 to the study and all potential participants were informed by invitation letter (appendix 1). By considering the possible resistance from potential candidates, all the participants were therefore recruited via personal network and snowballing. It was chosen since China is suffering from serious trust issue^[55,56]. Most people in China are unwilling to participate in a researching programme which is held by someone who they do not know. In front of a stranger, people normally behave protectively and are reluctant to share any personal information. They worry that others might share their information and harm them.

The whole process of recruitment and interview took approximately two months (September 2016 to October 2016). In order to reduce the limitation of the recruiting method on generality, four people who were selling food product at a street market were specially recruited. They had comparatively low income and were more vulnerable in the society. By concerning the possibility of their education deficiency, the invitation letter was not sent out to them, however the oral invitation and explaining were given before attending the interviews. (Normally the people who sell food on the street are less educated and most of them are originally from

economically backward areas. They are normally not covered by national health insurance scheme and their income is comparatively less.)

All the interviewees expressed that it was the first time for them to participate a such project and to be interviewed and recorded.

2.3 DATA COLLECTION

Due to the sensitivity of the topic and culture matter, individual interview seemed more preferable. It could provide a safer and more private setting for the participants^[14]. It can help to evoke their experiences and perspectives^[54]. Compared with focus groups, individual interview can maximize the response more effectively. The semi-structured interviews with the open-ended questions can provide an opportunity to participants to express themselves more freely and allow new ideas to be explored. A prepared interview guide will ensure the study questions will be answered and this guide may also be tailored according to the situation. The aim therefore would be best served by using this form of data collection.

One of these participants requested to look through the interview guide (appendix 2) before deciding whether to join the interview. The interviews lasted from eight to twenty minutes and average length was about twelve minutes. Some of the participants could hardly provide any information about cervical cancer and cervical screenings. Hence the original interview guide was re-modified and expanded. Their future prospect to gain the knowledge was added to the interviews. The interviews were conducted exclusively in Chinese and were recorded. The original recordings were translated into English by the author.

The final number of participations was decided by data saturation. Eventually twenty-one invitation letters had sent out. Seventeen women with the age range from 21 to 36 agreed and attended the interviews.

2.4 DATA ANALYSIS

The data was analysed based on Systematic Text Condensation (STC), which aim to describe the participants' experience rather than to uncover the underlying meanings^[57]. The analysis started from reading the transcripts and observation notes with a bird's eye perspective to gain

an overall impression. Several preliminary themes were identified. Second, it was to identify concepts (meaning units) by re-reading all the information, coding and grouping with the assistance of 'Mind manager software'. For example, "*I need to be fit to look after my girl*" was coded as family responsibility. Next step was to condense the content to an artificial quotation (condensate). For example, "*mum is very important for the children*". Last stage was synthesizing and interpreting a phenomenon and quotes were selected to illustrate the findings: "*I need to be fit to look after my girl. If I am ill, who can look after her and I do not think anyone can take care of her as well as me. As a mum, it is not easy but it is important to be physically and mentally strong.*"

2.5 ETHICAL CONSIDERATION

The data protection official at NSD - Norwegian Centre for Research Data was notified of the project." and the study was conducted according to the Helsinki Declaration (22). All participants joined the programme voluntarily and were informed orally that they were free to leave anytime during the project. All participants signed a written consent form before taking part in interviews (appendix 3).

Some risks were taken into account. During transcription of interviews all recognizable information about the participants was removed. Data were collected by the author exclusively. Data was also reviewed by the supervisors Professor Marit By Rise and doctor Ingrid Baasland. The privacy of the participants was well-protected and the data was and will not be shared without individual permission.

3. RESULTS

Seventeen participants were interviewed and the characteristics of the participants are summarised in Table 1. The themes were divided into three aspects: knowledge, attitude towards the test and the future prospect. The current study showed that the general knowledge about cervical cancer and cervical screening was lacking among the participants and there were not have enough opportunities for them to get to know such information. The participants were neither aware of the high incidence rate of cervical cancer in China and nor familiar with cervical cytology test. There were various factors that affected their acceptance of the test, such as family responsibility, personal status, amount of time spent in hospital, modesty and so on. The participants also discussed various ways to raise Chinese women’s awareness for reproductive health.

Table 1. Characteristics of the participants (N = 17)

Age		Mean = 31 (range, 21-36)
Civil status	Married	13
	Divorced	1
	Single*	3
Education	Bachelor / High Diploma	13
	High School	2
	Middle School	2
Number of Children	None	5
	1	10
	2	2
Work	Full-time employed	10
	Self-employed	5
	No work	2
Had cervical cytology test		6 35%

*Single means not married and does neither mean no partners nor no sex activities.

3.1 KNOWLEDGE ABOUT CERVICAL CANCER AND CERVICAL CYTOLOGY TEST

Lack of knowledge

All of the participants were familiar with the name of cervical cancer and heard of it in various ways. However, most of them did not even have any basic knowledge about it, for example, the location of cervix, risk factors of cervical cancer, and its prevention and relevant treatment. Their knowledge was worse off when it came to cervical cytology test. Only twelve of these seventeen participants had heard of the name of cervical cytology test. Most of them only knew this name and were not able to provide any further information. One participant told the researcher that although she knew that cervical cytology test was a method of preventing cervical cancer, she personally had no experience of receiving such test and was not able to describe how the process of the cervical cytology test was carried out.

I have heard these (cervical cancer and cervical cytology test)I do not know (how the test performed) and have never taken the test. (Participant 8, aged 35, married with 2 kids)

Another participant, who was working as a nurse in hospital commented that in China, thought that the knowledge about cervical cancer and cervical cytology test was generally lacking. As a health professional, she could not give much relevant information about the symptom of cervical cancer, the risk factors of cervical cancer and its prevention. Therefore, she believed that situations among others to possess such knowledge could be more worrying.

I think many people may not have got much knowledge about it. Even I am working in hospital, but not in gynaecological department, I am still not familiar with these. So it is not hard to imagine, how much other people, who do not work in health and medical field, will know and understand. (Participant 5, aged 30, married with 1kid.)

About one third of the participants in this study were not aware of the prevalence of cervical cancer among Chinese women. The low level of awareness could be explained as a result of inadequate knowledge. Most of the participants applied the incidence rate among their acquaintances to judge whether the disease was common or not. They explained that since the people they knew had not suffered from cervical cancer and the cervical screening was also not included in general health-checks, they would spontaneously assume that cervical cancer was

a rare form of cancer. Some participants considered that the low participation rate of receiving cervical cytology test was connected with the insufficient knowledge of cervical cancer and absence of the awareness of its prevention.

This low rate (of taking cervical cancer) can reflect the insufficient knowledge among people in China. I think we have not realized the necessity of having the test.....The preventions have not been concerned sufficiently. It may be because we do not have adequate knowledge and information to take the proper action. If you do not know it, how do you take notice on it? (Participant 11, aged 32, married with 1 kid)

Inadequate exposure to the information

Most of the participants commented that despite the information could be acquired from some resources, it highly depended on people's autonomy. Due to the lack of awareness, it was impossible for them to think about searching this information themselves in first place. About one third of the participants knew the cervical cancer because of Mei Yanfang, who was a famous pop star from Hong Kong and died from this disease. A few of them heard of it from their relatives and friends. Overall, the participants felt that there was no effective public exposure provided to them and they had limited opportunities to be educated. For example, there was no governmental campaign about cervical cancer and cervical cytology test as they experienced. In addition, some participants revealed that they hardly gained any information from health professionals. Only two of the participants had been advised by their doctors to take the test and only one of them actually took place in Qingdao. Most of them complained that when they went to see doctor or take examinations, there was no explanation or suggestion given by the health professionals.

When I have the annual check-ups, (I) just fill the form and actually I have no idea what the doctors are doing. I know I am having a gynaecological check-up, but I have no idea about which exact part of the body she is checking and what the purpose of doing this. Because I have never been told such information. I suppose if anything wrong, I will be informed. (Participant 1, aged 25, married with no kid)

Ineffectiveness of maintaining the knowledge

More than half of the participants said that, although they might have heard of some information about cervical cancer (and cervical screenings), it was not so impressive that they could not manage to recall the information after a while. Only very few participants could remember what they had seen or / heard. One participant, who very recently had cervical screenings which was a part of pre-marital examinations in Shenyang (another city) and was told by her doctor of the importance of receiving the cervical screening and some risk factors of cervical cancer. Another participant, whose company arranged a lecture regarding cervical cancer and provided the gynaecological examinations annually to the female employees, knew that cervical cancer had no obvious symptom at early stage, it could be effectively prevented but the risk would be increased with having repeated HPV infections. The participant, who could provide most information, searched relevant news online autonomously after she was told about the death of Mei Yanfang. She said it was shocked after she heard the news and it was also first time she wanted to know the cancer.

The participants agreed that some factors caused the low effectiveness on remembering the information. Besides the absence of awareness and the distractions by other things, one participant also addressed the issue of being overwhelmed by information. According to this participant, massive health information was available online nowadays, which could be very confusing and she was not able to tell what was more important to her. Thus, she just ignored it and had never paid specific attention to cervical cancer.

Although we can find everything online if we wish to do so. But it is hard to know what you want to get... Er ... I mean there are a lot of different diseases appearing on the news which came up with some sad or scary stories, I do not know which (disease) is rare, which (disease) is common. Sometimes, I just cannot be bothered to search for all these diseases. Moreover, people around me hardly have or discuss the cervical cancer, so even though I have heard the name (of cervical cancer), but it drowns among other (diseases), I would not take notice of it. (Participant 2, aged 28, single.)

3.2 ATTITUDES TOWARDS CERVICAL CYTOLOGY TEST

Motivation for taking the test

During the interviews, many participants showed a great willingness to receive cervical screening. The motivation was driven by several factors, such as family responsibility, personal un-wellness, and the effect from others' experiences. Some participants referred to being healthy as necessary to perform their roles in their families. They perceived themselves as main caregivers in the families and mentioned that they had to keep a good health for their children. The consciousness regarding health was stimulated by the family duty.

Also now I have got my kid, which makes me feel (my) health is very fundamental. (I) need to be fit to look after my girl. If I am ill, who can look after her and I do not think anyone else can take care of her as well as I do. As a mum, it is not easy but it is important to be physically and mentally strong. (Participant 3, aged 35, married with 1 kid)

I know it is a requisite to me (to be healthy) and I need to look after myself in order to look after my family, specially my child. And my mum is getting older and my girl is still very young, so I have got a lot of reasons to stay healthy. (Participant 6, aged 34, married with 1 kid)

Some participants were promoted by personal illnesses. They admitted that their previous gynaecological problems had made them understand the importance of reproductive health. They therefore became more responsive to take further actions. One participant decided to take the test because she recent suffered from a miscarriage.

I think it was because of the miscarriage I had last time. It happened last November. This made me feel my condition might not as strong as I thought and this accident may have harmed my uterus more or less. Therefore, I have decided from now on, I need to pay more attention to gynaecological health. (Participant 6, aged 34, married with 1 kid)

Not only the personal health problems influenced their attitudes towards receiving the cervical screenings, but also the experience of other people, such as their relatives and friends had profound impacts. Some participants described that they felt shocked when they heard the news

that their friends or relatives suffered from cervical cancer. It also made them realize that they were vulnerable to cervical cancer as well. Some of them changed their minds and took the cervical cytology test.

I was a bit scared I also went to hospital to have a check.....I did all sort of tests (health check-ups) from the head to the toe, which included gynaecological tests Before my friend got this disease, I had never consider about (taking) the test. Her experience affected me a lot. I never thought that (cervical cancer) would happen to her. We met up from time and time and she looked absolute fine before being diagnosed. It was the first time I realized (the cervical) cancer could be so close to me. (Participant 7, aged 34, married with 1 kid)

Marriage status and age

All of the participants who said that they had taken a cervical cytology test were married and took it either during their pre-marital check-ups or after they got married. It was commonly accepted by most of the participants that they did not need to worry about the disease before they got married. One participant, who recently got married, said that she had never been concerned about gynaecological problems when she was single. She said that it was stated by the hospital that the cervical screenings (like many other gynaecological examinations) was offered to married women. Hence the first time she took the cervical cytology test was during the pre-marital check-ups.

(Previously) I always thought it was far away from me. As (I) was not married and should have not worry too much about gynaecological matters..... I only did the B-Ultrasound before (I got married). It is because that most of gynaecological tests are available to married women and unmarried are not suggested to take (them). (Participant 17, aged 29, married with no kid)

In addition, many participants believed that the health condition was associated with the age: when a person got older, the possibility of having health problems became greater. They commented that along with the increasing age, they intended to pay more and more attention to their health. 35 to 40 years old was the ages provided by the participants, which they thought that they needed more consciousness about their health. However, not all the participants

would like to put the cervical cytology test in their health check-ups list. One participant mentioned that she was willing to take some health check-ups when she reached 40, but she had no interest in taking a cervical cytology test. Even after she was told by the author that the cervical cancer was a common form of the gynaecological cancer in China and the cervical cytology test was an effective way to protect from the disease, she still believed that this test was not necessary for her.

I am in a good condition and it is unnecessary to spend money on it. I think I will start to take the regular health check-ups once I reach 40. (Because) when we are getting to a certain age, (the condition of) the body is going downhill. So (I) have decided to take some health check-ups when I am 40..... I am not sure (if I will take the cervical cytology test) I think the normal health check-ups are (good) enough to ensure my health. This (cervical cytology) test may be not so essential or the disease may be not so common. (Participant 14, aged 35, married with 1 kid)

Time consuming

The cervical cytology test costs approximately 250 kroner for the test in Qingdao. Despite a few participants thought that the price could be a problem for some women, very few participants mentioned that the price was an obstacle for themselves to take the test. However, most of them regarded the time spent to take the test as one of the major barriers. Some participants admitted that although they had a positive attitude towards receiving the cervical cytology test, they found it difficult to find the time to do so. They described that it took quite considerable time to see a doctor and take the examinations. They were therefore reluctant to go to the hospital, and in most cases, they tried to avoid seeing doctor. Some participants said that they would only seek medical service when they had no choice. Taking care of children and working were the two main reasons to impede them. One participant explained the difficulties of going to hospital while taking care of her children.

Nowadays, you know it is very time-consuming to go to hospital. There are too many (people) queening to see doctors and taking examinations. Sometimes it does not just take one or two days to get all the tests done. And then it requires another time to pick up the results. As a mum with two children, it is certainly required a great effort to arrange a time for that....It is troublesome and I am very reluctant to go (to hospital).

My husband is very busy and has a lot of business travels. My mum is not willing to help me to take care of the children. I need to look after (the children) all by myself. Now it is a bit better than before as my little one has gone to nursery during the day. Previously, I had to take care of him all day by myself at home. I just could not afford to be ill. If I was ill, who could look after him. I could not take (him) to hospital with me just in case that he might get infected by others. Honestly, I am scared of going there. (Participant 16, aged 34, married with 2 kids)

Psychological barriers (Modesty)

Many participants regarded cervical screening as a very private topic and it was considered to be sexual-related. Nearly half of the participants expressed that they might only share such information with their mums, sisters or very close friends if the information was very important. They were unwilling to share this with others who were not so close to them. They thought that the topic implied some sorts of sexuality and the nature of the subject could make them embarrassed to talk about it. The concerns about others' reactions appeared in both married and unmarried participants. For example, one participant who was married thought that the marriage status could give her more confidence to share some information. However, she also feared that discussing too much information. Because it might raise others' suspicion of her having this kind of diseases.

I think in China many women are still very traditional and conservative. It is very rare to mention this kind of topics..... I think this kind of topics cannot be discussed freely among the friends. Otherwise my friends will think I must have such problems... (Participant 10, aged 33, divorced with 1 kid)

The psychological burden became heavier among the unmarried participants. One participant cited that talking about the cervical cancer and cervical cytology test equalled to telling others that she was sexual active. Even though it was well-accepted by young Chinese people to have sex before getting married, it did not mean that this behaviour was appropriate. She still felt it was immoral and 'losing face' if others knew that.

This (cervical cancer and cervical screenings) is not very common. Some of (my) friends are not married as well. It would sound very strange that some girls are chatting

about gynaecological matters. Er...it can be shameful to discuss it among the young girls who are not married. Nowadays, maybe it is common to have some (sex) experience before getting married and girls will not get criticized. But it is not something (we) are neither proud of or make public. So for us, when we have a chat, we are sort of avoiding this kind of topics. (Participant 2, aged 28, single)

One participant, who was the only one receiving gynaecological examinations from her community for free of charge, stated that despite a free service was offered to married women two or three times every year in her community, the attendance rate for these examinations remained low. She thought that many women in her community felt too embarrassed to attend such examinations.

It is possible that for some women it is too bashful to take the test. For example, in my community, even the examinations are provided for free, there are still a lot of women refusing to attend. (Participant 15, aged 32, married with 1 kid)

The feeling of embarrassment did not fade even after receiving the test several times. One participant who received cervical screenings regularly for many years still felt uncomfortable having the cervical cytology test. The unpleasant feeling was caused by the bad experience with some practitioners and exposure of her privacy. She felt that her privacy was sometimes not well-protected since too many people were present while she was having the test.

Sometimes I feel uncomfortable. I think it depends on doctors. Different doctors (can) perform the tests differently. Sometimes (they) are very gentle but sometimes they can be really rough. If the doctor performs roughly then I may feel painful. As far (as I experienced), there was no male doctor. But I still feel a bit shy. And most of the times, several patients in the same room. The room for examination is separated from the main room, but the people who are in the main room still can hear what we are saying. Sometimes, one person is performing and a couple of others are also present there to learn. I am totally exposed and feel shy because of others who are staring. (Participant 10, aged 33, divorced with 1 kid)

Habitual behaviour

About one third of the participants received general health check-ups annually and most of these services were provided by their companies for free of charge. For others who did not receive such welfare, some of them also took the check-ups and paid the services by themselves. The rest of these participants said that they had no interest in taking any reproductive preventative examinations and they only went to see doctor when they fell ill. They assumed that it was not a tradition for many Chinese people to take such examinations and lots of people intended to avoid seeing a doctor if there was no symptom / discomfort. The same attitude also appeared among some of the participants who had taken the cervical cytology test previously. One participant took the test seven years ago and was satisfied with her previous experience. She however refused to re-take it. She argued that there was no point to receive another cervical test since the previous test showed a normal result and she did not feel anything wrong.

The test I did last time was normal, it was a bit odd to retake the test again. Anyway, I do not have any symptom or feel any problem. (Participant 9, aged 32, married with 1 kid)

3.3 FUTURE PROSPECT TO GAIN THE KNOWLEDGE

Governmental effort

Most of the participants believed that the government could bring a greater impact on raising people's awareness on cervical cancer and cervical cytology test than other civil and voluntary organizations. However, some participants felt that the Chinese government itself did not have enough awareness on cervical cancer and gynaecological health. Some participants also pointed out that the current governmental attention should be diverted from the economic development and urban construction to the issues related to the livelihoods of the people: food and health. One participant described the importance of women in a society. She addressed that women played a vital role and their health would directly affect the future of a country. Therefore, women's health should be emphasized by the government.

I hope this kind of programs of caring for women's health can be upgraded and organized by the government as the influence power will be enlarged accordingly. More health organizations should pay the attention to women. This is a special group. Because in China, mum's health is the basis of the baby's health. To ensure the future of our country, it is therefore important to make sure the mum to be healthy. Mum is a very important role in the child's life. I hope to advocate the whole society to draw more attention stepping up efforts to the propaganda to women's health..... If the government can make great contribution, then it will have greater impact and the awareness (on reproductive health) will be raised over time. (Participant 10, aged 33, divorced with 1 kid)

Issues faced by health care providers

Some participants complained that doctors in general were too busy to answer their questions thoroughly. It would be welcomed if health service providers could get more involved in helping to raise the awareness of the public. However, this idea was not supported by some participants. There were a few issues cited in the interviews. For example, the coverage and the effect from hospital might be limited as it would not benefit people who did not visit there. They also revealed that sometimes they did not trust the doctors and they questioned the underlying purpose of the doctor's suggestion: for the patient's interest or for the doctor's own economic incentive. One participant replied that since she did not have enough medical knowledge, she could not judge which examination was necessary. Thus, she would take the cervical cytology test as long as the doctor asked her. However, she still doubted her doctor's motivation.

Even though I think the doctor may be trying to make money from me, I will still take the test. We do not have the necessary knowledge to decide what we should or should not take. So I just follow that the doctor says. (Participant 14, aged 35, married with 1 kid)

Moreover, another participant who was currently working in a hospital thought it would not be welcomed by the health professionals either. She explained that due to the insufficiency of resources in hospitals, it seemed not possible to give any extra job to the service providers. Under the current conditions in China, doctors sometimes even struggled to see all their patients

and they would not have spared time or energy to provide more information to their patients. This was beyond the capability of the hospitals.

Because in China, the medical resources are insufficient, compared with the number of patients. Sometimes the waiting time is very long. As doctors have got a lot of patients to see every day, they may have to reduce the time spend on each patient, so the doctor cannot and will not think thoroughly for all patient. (Participant 5, aged 30, married with 1 kid, nurse)

Get communities, community hospitals and companies involved

The participants thought it could be more effective and efficient if communities and companies could make some contributions. In the present study, only one participant had an opportunity to attend the lecture about cervical cancer which was held by her employer. Many participants said that they were interested to attend such lectures. Meanwhile, some participants pointed out that even their companies provided the general health check-ups every year, the cervical cytology test was normally not a part of the examinations. They thought that the test would be more likely to be accepted if it was included in the list.

The test should be included in the general examinations because many people only take the general examinations. If it was included, more people would understand and accept the test. (Participant 6, aged 34, married with 1 kid)

Despite that most participants supported the idea of getting the community involved, one participant worried about the competence of communities and community hospitals. She told the author that she normally sought for medical assistance in large-capacity hospitals. Therefore, it was important that health care could be delivered with equal quality by the community hospitals. She would also prefer if such activities could invite some reputable specialists.

It (The interest of attending the service held by the community) depends on what kind of qualification and experience has the doctor got. If some specialists can give some lectures in our community, I would be interested to attend. So we can check our symptoms by ourselves according to the contents from the lectures and consult them during the lecture. It will be effective. (Participant 16, aged 34, married with 2 kids)

Internet

Nearly all participants talked about the potential of internet to increase the knowledge and awareness of cervical cancer and cervical cytology test. Some participants thought it had some great advantages. Smart phones were widely used and they believed that this could be an ideal medium to build a bridge between the knowledge and the people. It was more cost-effective than other methods as more people could be reached, and relevant and new information could be shared instantly. However, the issue of reliability was raised by some participants. One participant stated that there was a lot of information online and it was very fundamental to ensure that reliable and correct information was obtained by the users.

I think it is good idea (to use internet for public accessing the related information). But too many advertisements and maybe it is a bit confused and sometimes it can be difficult for people to get right information. (Participant 1, aged 25, married with no kid)

4. DISCUSSION

The findings in the current study showed a worrying picture because the participants generally lacked information about the cervical cancer and the cervical cytology test. Cultural factors, such as feelings of embarrassment and assumption of low-level risk, had a significant impact the participants' acceptance of receiving a cervical cytology test, especially among unmarried participants. The inconvenience of obtaining the cervical screening service was considered as another obstacle. In order to raise the awareness in the future, a few methods were discussed by the participants, such as getting the health professionals involved and maximizing the utility of the internet.

4.1 KNOWLEDGE ABOUT CERVICAL CANCER AND CERVICAL CYTOLOGY TEST

The present study revealed that many participants perceived themselves with low risk for cervical cancer, which is consistent with findings from previous studies^[34,43,51]. This may be partially explained by the lack of factual knowledge. Similar findings were found in previous and the current study: many Chinese women were not aware of the prevalence of cervical cancer in China or risk factors for cervical cancer, and they were not familiar with the relationship between the HPV infection and cervical cancer^[41,43,58,59]. The present study showed that the participants had little knowledge about prevention and treatment of cervical cancer and some of the participants had even never heard of the name of cervical cytology test. The current findings, in line with previous studies, considered that incomplete understanding of the subject remained as a major barrier for women to receive cervical cytology test^[41,43,58]. Many quantitative studies worldwide have showed that many factors were connected with the knowledge level such as level of willingness of undergoing the screenings, education, family histories and income^[58,60-62]. The current study exposed that these young women's lack of knowledge was related to the inadequate exposure for correct knowledge. This was not consistent with the previous studies, and the healthcare provider had not played a major role regarding health education in the present study^[58,63]. This study also revealed that the participants' effectiveness in remembering knowledge was rather low and most of them were not able to recall this information after a period of time. It would be useful for further studies to investigate what factors are related with the effectiveness of recalling the knowledge. Little

relevant knowledge and low awareness among the participants in the present study could directly affect their behaviour, which is in line with previous studies^[59,64].

4.2 ATTITUDES TOWARDS CERVICAL CYTOLOGY TEST

The present study found that culture factors had a great impact on women's attitudes towards cervical screenings and directly affected the acceptance of cervical cytology test, which agrees with previous studies^[34,43,46-48,51]. Confucianism has been the dominant doctrine in Chinese history and was embedded into the traditional Chinese culture for a long time. The findings in the current study are consistent with the previous studies in that most of participants felt uncomfortable and shy talking about cervical cancer and cervical screenings, and would only discuss this with the family members or very close friends^[46-48]. Reproductive health is considered to be a part of sexually-related issues and sex is considered as a culture *taboo*^[45]. Chang et. al argued that the cervical screenings were likely to be categorized to sexuality health/disease as it is to examine the female reproductive system^[65]. Therefore, the open discussion about gynaecological health would be assumed to be inappropriate behaviours. People are supposed to be well-behaved in public. However, the participants did not specifically connect the cervical cancer to promiscuity as other previous studies suggested^[46,49,50]. The previous studies revealed that Chinese women generally assumed that they had low susceptibility of gynaecological cancer, which was also found in the present study^[34,43,46,51]. Many participants believed that the healthy lifestyle and relatively young age would keep them away from cervical cancer. Chang et al explained that many Chinese women preferred Chinese medicine over western medicine, and the orientation of holistic preventive measures in Chinese medicine could result in them engaging in some preventative methods, such as by eating healthful foods, to protect against cervical cancer rather than regular cervical screenings^[65]. Further studies may be required to investigate the relationship between the philology of traditional Chinese Medicine and the health seeking behaviour.

The present study was in accordance with previous findings, indicating that married women were more likely to accept the cervical screenings and many of them thought that preventive health behaviour should be deferred until they got married or turned to 35 or over^[46,52]. All participants who had the cervical screenings in this study were married. This could indirectly reflect a high level of refusing the cervical screenings by the unmarried women. There are two possible reasons for this situation. One is that fewer gynaecological services were provided to

the unmarried women. Most of the participants mentioned that the gynaecological examinations received from their companies or communities were only available to the married women. Tu et al. also revealed that family-planning workers in China were not aware of the necessity of providing the sexual and reproductive health services to unmarried women^[66]. These official workers were ambivalent about the provision of such services to unmarried young people. Moreover, women feel shameful speaking about premarital sexual activity. Even though premarital sex has been accepted by more and more Chinese young people, it is considered as “*Losing face*” behaviour and is still not well approved by elder generations^[67]. Some conservative parents would feel their daughters destroying the family’s reputation and this behaviour should be criticised. Unmarried women with gynaecological problems would suffer the pressure from both their families and the society and they usually intend to avoid taking such relevant examinations^[68,69]. The current study did not gather the information about the participants’ sexual status and further study may be applicable to investigate influence of personal sexual behaviour on attitude towards gynaecological examinations.

In China, women play a significant role in taking care of the family and perceive themselves as a primary caregiver^[70]. Our findings indicated that the participants were more willing to attend the cervical cytology test if they had children, which was also mentioned in a previous study^[49]. They sought to keep healthy in order to serve their families and perform their duty, especially as a mother. Holroyd et al. suggested that Chinese women were likely to tie themselves to others’ life cycle and the decision making on health was influenced by the family responsibilities^[36]. The promotor can be generated from personal and others’ illnesses. Friends or peer stories of cervical cancer were mentioned by several participants, which influenced them to seek for cervical screening, which was also cited in a previous study^[36]. These stories made them realize that the cervical cancer was not rare. Some of the participants were worried and some acted correspondingly.

The present study did not show a positive correlation between the attitude towards receiving cervical screenings regularly and the previous experience of the practice, which was cited in a previous study^[48]. For the participants in the current study who took the regular cervical cytology test, it was just simply because their companies or communities provided this service to them. Even though some participants had positive experiences of taking the test, the cost seemed to be a barrier for them to continue. The actual expense of taking cervical cytology test might be a barrier for some Chinese women. However, as far as the participants concerned, these young women in the present study considered more about what they had to sacrifice in

order to take the test. The money and time lost while in hospital, which were cited in the current study, were not thoroughly discussed in the previous studies. First, the medical care in China differs from some western countries and there is no GP available for the primary care. Normally people just go directly to a hospital outpatient department when they feel unwell^[71]. It is not a Chinese tradition to book an appointment in advance. Nowadays the booking service has been introduced in large-capacity hospitals in Qingdao. It is not, however, fully accepted by the public. Therefore, in most cases, it takes much longer waiting time to see the doctor and take examinations than in western countries.

Meanwhile, the resources among the hospitals are imbalanced under the system of marketing economy. The large health care providers possess much more hardware and software resources: manpower, technology, equipment, finance and reputation^[72]. In Qingdao, four large hospitals are fully dominant among over 200 hospitals and clinics (including both public and private), such as the Affiliated Hospital of Qingdao University, which is the best hospital in Qingdao and was established in 1898. After over one hundred years' development, it has now four branches cross the city, with total of 5,000 employees and 3,500 inpatient beds available. The total fixed assets reach to 20 billion RMB (about 25 billion kroner) and the medical equipment is valued about 13 billion RMB (about 16 billion kroner)^[73]. Most people prefer the large-capacity hospitals rather than several-staffed clinics. One participant mentioned that she doubted the quality of medical services in these small clinics. If she had to seek for medical assistance, she always selected the big reputable health care providers. It was reported that the annual outpatient amount from medical and health organization throughout the whole city was over 50 million times and 80% of the patients received the medical service from the major hospitals^[74]. It results in, like other cities, two extremes among the hospitals in Qingdao. One is that the large hospitals are crowded with the patients and the capability of medical services keeps stretching whereas on the other side the smaller hospitals / clinics are struggling to get patients in^[75]. Due to the incomplete booking system and a huge number of patients in hospitals, it is difficult to reserve time for medical checking. A patient with a job can be financially punished due to the absence from work. (According to Chinese Labour Law, the wage is not given due to absence for personal matters. However, there is no governmental guide for the leave of visiting hospital. It varies and depends on individual company's policies.) The reluctance of attending the cervical cytology test seems to be understandable. This may help to explain the inconsistency between the motivation of receiving cervical cytology test and factual

action among the Chinese women, which was found in previous studies^[34,43]. The author's personal experience is attached as appendix 4 to provide further illustration.

However, the fatalism - so-called *Mingyun* in Mandarin - found in previous studies was not cited by the participants^[36]. All the young women neither thought it was a destiny to have cancer nor considered that the discussion about the cervical cancer would cause it to actually happen, which has been mentioned in the previous studies^[47, 52]. They had considerations more from the scientific aspect rather than superstition. This movement may be influenced by their education and information modernization. They can judge the matter with more scientific view and would not be blinded by some ancient myths. They neither showed a negative attitude towards the cervical cancer nor thought the disease was something of punishment.

4.3 FUTURE PROSPECT TO GAIN THE KNOWLEDGE

Previous studies rarely speculated about the future or how to fix the situation. Most of the participants showed little knowledge on the subject. Information about cervical cancer and cervical cytology test was gained through personal contacts or from online resources. No national or governmental campaign was carried out as far as they knew. It could imply that, to a certain extent, the public attention to cervical cancer was generally lacking. The decision maker on the top level has not given enough focus on this matter.

Many participants advised that it would be effective if healthcare professionals can act as information providers. However, it was not supported by all participants due to various reasons. Indeed, the tense relationship between the patient and the doctor can be a barrier for the patient to follow the doctor's advice. Patients do not trust their doctors and they often doubt what the real motivation behind the doctor's advice. "Red bag money" is often given by the patients to doctors in order to ensure that the standard medical surgical service will be delivered properly. Doctors make profit on their prescriptions and it was reported that more than 90% of marketed price drugs were sold with commission^[76]. To pursue higher staff interest, the over-treatment to participants is widely spread in China^[76]. The relationship between the patient and the doctor is deteriorating^[71,77]. Under such phenomenon, the patient would question the doctor's motivation and they do not believe that the doctor acts for the patient's interest^[77].

No one can deny the contribution of the internet with spreading knowledge and the potentials of reforming health systems. However, the present study showed that the overwhelming

amount of information also confused the participants. It was reported that over 80 million websites with health information were available but the quality of online information was not well-controlled^[78]. Some participants were not able to tell what was important to them and were annoyed by massive information. At most of times, they intended to ignore them. Possibility of misguidance could also cause unnecessary worrying or delaying of seeking for treatments. It is essential to deliver the right knowledge to the right people.

4.4 METHOD DISCUSSION

This qualitative research served the aim adequately and it exposed some issues which have rarely been discussed: the inconvenience of attending the service and future aspects on gaining the knowledge.

However, several factors might have influenced the result of this study and need to be addressed here. First of all, the participants were recruited by convenience sampling. The snowballing method produced participants that came from similar backgrounds. The sampling was also relatively small and only 17 women joined the interviews. Moreover, it was the first time for all of the participants to join a research project. The voice recorder had an especially large impact on the participants' performance. On one hand, some of them acted like they were taking an exam and tried to dig an answer for every question, including some of the questions which they did not know. On the other hand, some participants were too nervous to recall and provide all the information. Furthermore, the information about where they were originally from and how long they had been residing in Qingdao, was not gathered. The current study was therefore not able to reveal potential geographic variations regarding knowledge and attitudes towards the subject such as those between urban and rural areas. The ethnic and cultural diversity in China should be emphasized. Hence, the results from this study cannot be generalized with overall population in China. Despite it is suggested by Malterud that the analysis was more appropriately to be conducted by a second researcher, this study was collected and analysed by the author solely, which could cause a narrower analysis space^[57].

The author lies in the age range of the candidates for the present study. Compared with other young women living in China, the author, who was living abroad over ten years, has a higher preference to cervical cytology test. This was the initial motivation to launch the project: to investigate the underlying reasons of low attendance rate of the test among Chinese young

women. The author was born and had lived in Qingdao for many years in her life, where she had the education for the primary and secondary school. Thus with the similar cultural background to these candidates the author could have a better understanding with what the participants described and minimize the misinterpretations. However, due to the personal preference to the test, the author sometimes intended to persuade the participants to accept the test during the interviews, which might affect the participants' thought. Since most participants had known the author for considerable periods of time, the trust was well established, which helped to reduce the participants' reluctance of sharing certain information. Nevertheless, the data was collected exclusively by the author, who was an apprentice in qualitative research field. Therefore, some of the interviews were not carried out sophisticatedly and the participants were not inspired to give further information on some issues.

The final findings came a long way. At beginning, the author was trying to list all statements cited in the interviews by the participants, making the analysis seemed to be stuffed with many themes and subthemes. It looked quite confusing and the purpose of the research could not be achieved. Hence the findings were tailored further according to the relevance of the project and re-grouped based on the aims. Having said that, different analysts may have different views on what are relevant to the study and conclude the result in various ways.

5. CONCLUSION

In conclusion, the findings of the present study suggested some possible reasons of low attendance rate of cervical cytology test in China. First of all, it was a lack of relevant knowledge among these young women due to inadequate exposure the correct information, which can directly affect their awareness of cervical cancer. This highlighted an urgent need to improve knowledge among Chinese young women. Policy makers should try to increase knowledge among these women. Governmental campaigns, use of internet, and participations of companies, communities and community hospitals are possible ways to increase the knowledge and raise the awareness. However, sophisticated and systematic strategies are required to ensure that proper and reliable information reach the women in an effective manner.

This study showed that Confucianism still has a far-reaching impact on Chinese culture, since reproductive health was considered to be sexual-related. Most participants felt embarrassed to discuss it. For these unmarried young women, they bear extraordinary burdens from both their families and societies. They often receive a disgraceful response from others including health professions when they request for a cervical cytology test. Others' reaction could discourage them of taking the test. It is important for the health professions to have a right attitude to their patients and avoid such abrupt judgement on people. The service should become more accessible to both married and unmarried women.

In addition, the current study also showed that Chinese women were generally overoptimistic towards cervical cancer and they did not consider themselves at risk. Some participants did not have a habit of taking reproductive examinations when there was no seen symptom. The inconvenience of attending the cervical cytology test was another barrier. Some participants only attended the medical service when there was no other choice. These matters should be taken into account by the local governs when promoting the attendance of cervical cytology test. Providing a free service of cervical screen may be not a full answer to improve the attendance of cervical screening. Cooperation among the local government, communities and health service providers is required. Improving the service quality of the community hospital is the basis to attract women to visit local clinics and divert the flow of the patients from the dominant hospitals. Interventions from the communities are also required to ensure they receive the cervical screening on the regular basis and follow-up takes place if the result is abnormal.

The study also exposed several new issues, for example the fragile relationship between patients and doctors. Some patients intended to consider the motivation behind the professionals' suggestions to be incentive driven. It is fundamental to standardize and perfect the mechanism and government to ensure the interest of patients is well-protected.

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APPENDICES

Appendix 1

Invitation to take part in the project: “Knowledge about and attitudes towards cervical cytology test among young women in Qingdao, China: A qualitative interview study”

Background

Cervical cancer is the third most common cancer among women worldwide. Every year approximately half million women are diagnosed and 275,000 expected to die from the disease. In China, cervical cancer is ranked as the second most common cancer for women, after breast cancer. We have little knowledge about Chinese women’s knowledge about and attitudes towards taking the Pap test which is a screening test for cervical cancer.

The aim of this study is therefore to explore young women’s knowledge about and attitudes towards the Pap test.

What does it involve to take part?

We want to interview women between 20 and 35 years, regardless of marriage status. If you participate in this study you will take part in an individual interview with master student Qiang Li. The interview will be about what you know about the Pap test and cervical cancer, as well as your thoughts about and attitudes towards taking such tests. The interview will be conducted in a private room, will be audio recorded and later transcribed. The interview will take approximately 20–30 minutes and refreshments will be provided. T

What happens with the information about you?

Your personal information will be disclosed anonymously and all the original audio records and transcription will be kept safe. The data material is only accessible to the master student and her supervisors. When the results from the study are presented it will not be possible to recognize your person or personal information.

Taking part is voluntary

Participation is a 100% voluntary. You have the right to refuse to participate or to withdraw from the study at any time, without giving any reason for this. The study is approved by the Regional Committee for Medical and Health Research Ethics in Middle Norway.

The study will be conducted by master student Qiang Li. Main supervisor is Professor Marit By Rise and co-supervisor is Fellow and Medical doctor/gynaecologist Ingrid Baasland, both NTNU, Norway.

If you want to take part in the project, please sign the consent form.

If you have any questions about the study, please contact:

Qiang Li

Master student in Public Health: Specialising in Global health

Institute of Public Health and General Practice, the Faculty of Medicine, NTNU, Norway.

E-mail: qiangl@stud.ntnu.no

Appendix 2

- Can you introduce yourself briefly? (Age, education background, occupation, marriage status)
- Have you heard about cervical cancer?
- What do you know about this type of cancer?
- How do you know about this information?
- Have you heard about the cervical cytology test?
- What do you know about this test?
- How do you know about this test?
- Have you ever taken the test yourself?
- When did you take this test and why?
- How did you feel about taking this test?
- Have you ever talked about the test or cervical cancer with someone? (Your doctor, your mother, your peers, boyfriend/husband, other relatives)
- If I am telling you that, the test is a very effective way to prevent cervical cancer. Will you do that as a routine check? If not, why?
- Only one in five women have ever taken the test in China, any comments and thought on that?
- Any suggestions you want to give to promote people's awareness?
- Anything else you want to add here?

Appendix 3

Consent to take part in the project: “Knowledge about and attitudes towards the Pap test in young women in Qingdao, China. A qualitative interview study”

- I confirm that I have read and understood the information sheet for the above project and the researcher has answered any queries to my satisfaction.
- I understand that my participation is voluntary and that I am free to withdraw from the project at any time, up to the point of completion, without having to give a reason and without any consequences. If I exercise my right to withdraw and I don't want my data to be used, any data which have been collected from me will be destroyed
- I understand that anonymised data (i.e. .data which do not identify me personally) cannot be withdrawn once they have been included in the study.
- I understand that any information recorded in the investigation will remain confidential and no information that identifies me will be made publicly available.
- I consent to take part in the project
- I consent to the interview being audio recorded.

Date

Signature of participant

Appendix 4

Personal Experience on Health Check-ups in Qingdao

It was on 14th November 2016 and I set off from home at 7:30 in the morning to go to The Affiliated Hospital of Qingdao University, which is one of the dominant hospitals in Qingdao and 6.5 km away from my home, for the health check-ups. Due to the heavy morning traffic, I arrived there around 8:40. The health check-ups is a separated department and locates opposed to the main hospital buildings. Since the blood must be taken before 9:00 for those tests, I came to the service desk straightaway and tried to choose which tariff I preferred. The price ranged from 300 RMB to over 15000 RMB and with detailed examinations' names. Some of the names may be easy to be understood such as Liver function test, Kidney function test. Whereas some can be a challenge to normal citizens who have no medical background to understand, for example, C13 breath check, Thinprep cytology test (TCT), Rapid quantitative detection of urinary iodine. Two nurses were working in the front desk and they were not able to answer all my questions as there were five people still queuing behind me. So I made my choice without understanding the purposes of some examinations which I was going to take. Anyhow it included general check-ups and a gynaecological sonography, gynaecological observation & TCT which I specially added to my check-ups list. The total cost was a bit over 2000 RMB and including 240 RMB for the gynaecological observation & TCT.

After paid the money, I got a form with a list of examinations' names which covered the whole A4 paper. Then I saw some poster were hanging up outside of some examining rooms when I was queuing for the ultrasound. There was one poster about cervical cancer. It mentioned about HPV vaccines, HPV test and TCT. It suggested that women aged 21 to 65 should take the TCT & HPV tests.

It took about 3 hours to complete all the tests. After consulting with the doctors, three of these tests were not safe while I was breast-feeding.

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After waiting for one week and half, I went to the Health Check-Ups Department again to get my health report. The report was over 10 pieces of paper which listed the all results from the tests which I took last time. Luckily, it showed what the health problems and the given advice on the first page. I was suggested to seek further medical assistance for my thyroid nodules which I was not aware of. Therefore, I went to the main outpatient building of the hospital as suggested. It was 2:30 in the afternoon. I was too late to get myself registered that day and needed to go back for another day.

Please note:

1. The gynaecological examinations are auxiliary tests, which means these cannot be ordered alone and a general check-up set has to be chosen first. If someone only wants to take the gynaecological tests, then she has to go the gynaecological department instead, which locates in the main outpatient building.
2. In this hospital, it can be time consuming to get registered to see the doctor. In most cases, it takes a whole morning.
3. There was a bracket written 'only for married women' attached with gynaecological observation and TCT on the price list of the check-ups. In China, doctors intend to refer 'married' to 'sexual active'.
4. The check-ups I had may be not cheap to some people. For normal working class, these examinations about a half of her month-salary. For people who work in a decent company with a decent salary, the company normally provides the health check-ups for free. For those with less income, they normally need to pay the examinations by themselves.