

Knowledge Attitude and Practice of Women in Shiraz about Cervical Cancer and Pap Smear 2009

Hadi N¹, Azimirad A²

Abstract

Background: Cervical cancer is one of the prevalent and mortal cancers. The aim of the study is to assess knowledge, attitude and practice of women toward this cancer and Pap smear.

Methods: We carried out a cross-sectional study among 402 women through a questionnaire with 5 socio-demographic parameters and 14 questions about knowledge, attitude and practice. We aimed to know how knowledge, attitude and practice are affected by socio-demographic status and how practice is affected by knowledge and attitude.

Results: The mean score was 4.09. Knowledge and age did not correlate directly. Old aged women had the best knowledge. As the number of children rose, knowledge deteriorated, vice versa about the age of marriage and education. The clerks were better than housewives and businesswomen. Just 3.5% did not consider the regular Pap as necessary (with the lower educational level). Almost 99% intended to get more information. The minority (28.1%) had the incorrect attitude toward the curability of the cancer. Most of the women referred to do Pap due to health center personnel's advice. About 80% had undesired practice.

Discussion: The educated ones had more appropriate and optimistic incorrect attitude compared to the uneducated ones. As more years pass from the age of marriage, practice gets worse. All the newly married women had the desired practice, correct attitude and intended to get more information. All the women who knew it unnecessary had undesired practice. Women with the desired practice had 9% more correct attitude and 9% more optimistic incorrect attitude compared to the undesirably practicing ones. Totally, practice is not much influenced by attitude.

Keywords: Knowledge; Attitude; Practice; Cervical cancer; Pap smear; Screening

Please cite this article as: Hadi N, Azimirad A. Knowledge Attitude and Practice of Women in Shiraz about Cervical Cancer and Pap Smear 2009. Iran J Cancer Prev. 2010; Vol3, No3, p.117-26.

1. Department of Community Medicine, Shiraz University of Medical Sciences, Shiraz, Iran
2. Shiraz University of Medical Sciences, Shiraz, Iran

Corresponding Author:
Afshin Azimirad, Medical Student
Email: tafshina@gmail.com
Tell: (+98) 711 235 44 31

Received: 4 Mar. 2010
Accepted: 1 May. 2010
Iran J Cancer Prev 2010; 3: 117-26

Introduction

Cervical cancer is definitely more common in the developing countries; the overall rates are approximately twice as comparing [1]. The mortality rate of this cancer in a research done in four provinces of Iran in 1999 was 1.2 over 100,000 females from all ages, causing it to be the ninth mortal cancer in women [2]. In another research done in Iran (2003), cervical cancer's crude rate was 2.34%. [2]. This cancer is most prevalent in young ladies, [1] but actually women at any age are at the risk of this cancer [3]. The incidence of this cancer is more in reproductive ages (30-45), while other malignancies usually rise with increase in age. However, mortality of this cancer does not obey the

same rule, peaking with age [1]. Actually, 40% of all deaths and 25% of the prevalence of cervical cancer happen in women older than 65 years old [4]. Better access to cervical cancer screening programs could lower both the incidence and mortality rates for this cancer. With the use of the Papanicolaou (Pap) smear from about 50 years ago, the main workup of the cervical cancer screening, its incidence has declined dramatically [1-6]. It is estimated that Pap has decreased the mortality of this cancer as much as 99%, making it the best cancer screening method ever developed [3]. According to the Iranian health ministry program, all the newly married Iranian women should undergo this test annually for three years and after that in the case of being normal it should be done every three years up to the age of

fifty, and then they have to do it annually [4,7]. Unnecessary or wrong Pap smear is not only helpful, but also will impose some costs for the health system of the country and the patients [7]. Therefore, more research on the epidemiology of this cancer and evaluation of Pap screening method among our nation is highly recommended. The information about this cancer, high risk people and Pap smear has to be given to any woman of our society through health centers and mass media [2]. Regarding the cervix cancer prevalence and mortality, the easiness of controlling this cancer by screening (it is believed that the mortality of this cancer can be reduced up to 80% by regular screening[8], even opportunistic screening has been reported not to be so much effective[9]) and the significant role of Pap smear in the early diagnosis of this cancer which results in a significant decrease of death rates from one side and also mentioning that It is estimated that the cost of screening every five years of a woman is 100\$ per disability adjusted life year (DALY) gained compared with 2600\$ per DALY for treatment and palliative care of invasive cancer of the cervix[10] on the other hand, that is enough to make health systems apply Pap test regularly and persistently to achieve a healthy society. This will not be fulfilled without the compliance and cooperation of every woman in the society. Now, considering the importance and indication of the cancer screening programs, we aimed to investigate the knowledge, attitude and practice of a number of Iranian women about this cancer and Pap test as its most reliable screening test.

Materials and Methods

The sample population of this cross-sectional study consisted of the married women in Shiraz, Fars province, Iran. The method of sampling was stratified random sampling. We divided the city socio-geographically into three parts of north, center and south (with the aim of covering three different socioeconomic levels of lifestyles). Then, a list of all of the health centers doing Pap test in selected parts was prepared and one in every part was chosen randomly. First, we prepared a reliable, valid and self made questionnaire (five socio-demographic parameters including age, age of marriage, number of children, job and education plus nine knowledge, three attitude and two practice questions). Internal consistency was assessed by Cronbach's α (0.73). The validity of the questionnaire was also assessed by a gynecologist and a community medicine professional. There was an attempt to assess how socio-

demographic factors can affect knowledge, attitude and practice and also how practice is affected by both knowledge and attitude. The women were asked questions face to face on doing Pap test. We prepared some courses for the questioners to give them adequate information about this research and how to be convinced of the participants' cooperation, reliability and consent. We managed to collect the exact equal number of papers from all the three centers in convenient sequential (134 questionnaires from each one, totally 402 subjects). The inclusion criterion was each person's agreement and if no agreement was achieved, the person was excluded. If she seemed to be not reliable or informative, she was also excluded. As previously mentioned, we prepared nine questions assessing the participants' knowledge. For each correct answer, the person was given one point and no point for the incorrect answers. We defined three groups for knowledge score: 0-3, 4-6 and 7-9 as bad, moderate and good knowledge groups. Then, we analyzed the grades with the five socio-demographic factors. Due to the large age range of the participants, we divided them into eight age groups: from sixteen to fifty into seven groups with five year intervals and an eighth group from fifty one to sixty eight (because of the low number of people after the age of fifty among our participants). For the age of marriage, we divided them into five groups with five year intervals, (11-35). Regarding the specific culture of Iran, marriage is supposed to be the age of coitarche. The number of children was reported from zero to nine. We divided them into three groups: 0-2 as low number of children, 3-4 as medium number and 5-9 as high number of children. For educational level, we divided them into five groups. For job, we had three groups. Three questions were supposed to assess their attitude. One of them was about knowing whether doing Pap smear on a regular basis was necessary or not. If the answer was "No", a "Why" question was asked to provide the cause. Another one was about their attitude towards the curability of the cancer. And the last one was about their desire of having more information about the subject. Two questions were designed to challenge their practice. 'Why have you come to do Pap smear?' as the first question which had six answers in the answer sheet, making the questioner able to mark one or any of them if mentioned by the participants. The second question evaluating their practice was about the number of doing this test and the questioner was supposed to put the exact number. Absolutely, the crude number one mentions cannot be a good

Table 1. The distribution of the respondents upon the 5 sociodemographic factors

Age	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-68
No. (%)	21(5.26)	101(25.31)	124(31.07)	72(18.04)	47(11.78)	23(5.76)	5(1.25)	6(1.50)
Age of Marriage	11-15	16-20	21-25	26-30	31-35			
No. (%)	73(18.34)	206(51.78)	93(23.36)	23(5.78)	3(0.75)			
No. Of Children	Low(0-2)	Moderate(3-4)	High(5-9)					
No. (%)	333(83.04)	55(13.71)	13(3.24)					
Education	Uneducated	Primary school	Junior high school	High School	University			
No. (%)	12(2.99)	75(18.70)	138(34.41)	137(34.16)	39(9.72)			
Job	Clerk	Self-employed	Housewife					
No. (%)	34(8.54)	8(2.01)	356(89.44)					

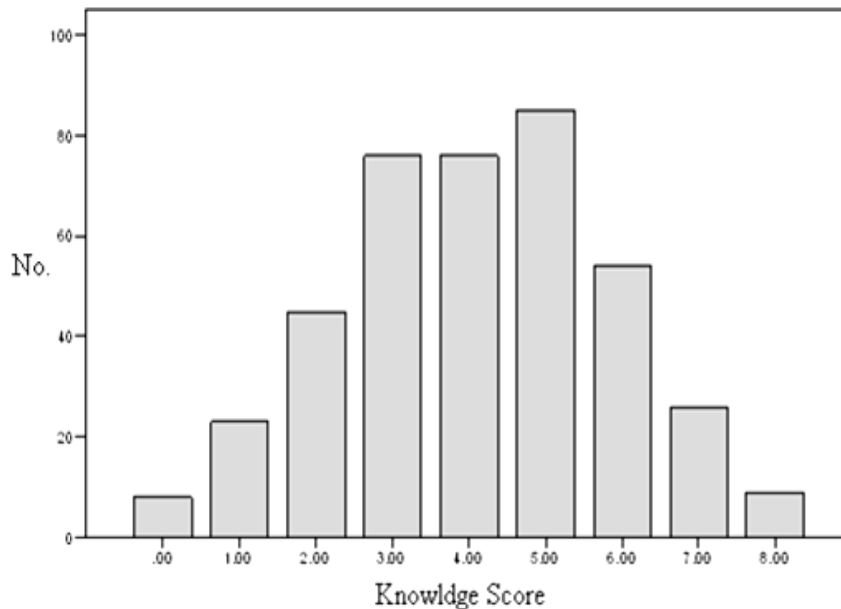


Figure 1. The distribution of knowledge score about cervical cancer and pap smear among women in Shiraz: "Each score was gained by how many subjects?"

indicator of her practice, because it should be interpreted with the eligible years she has to do the test, in this way her practice can be judged. According to the studies the researchers of this project did, there is no need of assessing the practice of the participants by this question with four socio-demographic factors. We preferred to assess it with just the age of marriage (because of the virginity of females in our society prior to marriage doing Pap smear is not practicable). Due to the large age range of marriage (25 years), we divided them into four groups. In the first group, people were newly married or just one year had passed from their marriage. In the second group, two or three years had passed. In the third group four to nine years had passed. The fourth group consisted of the ones with more than nine years of their marriage. Then, we defined desired and undesired practice for each group based on the national routine program mentioned previously and the number of attendance for doing the test as provided by this question. We investigated the relationship between the practice of the participants (desired, undesired) with their knowledge (bad, moderate, good) and also with their attitudes.

The software used for statistical analysis was SPSS 15, Descriptive statistics (such as Frequency, SD, SE, mean and median and others), student t-test, chi-square test and Pearson correlation for finding

correlations, Anova for between and within groups and Tukey for multiple comparisons were used.

Results

All the 402 subjects had the mean score of knowledge of 4.09 ± 1.77 out of nine, which on the percent scale equals to 45.4%. No one got the complete score (9), while eight got zero and the bulk of the population was between 3 and 5. Their mean age was 29.95 ± 7.32 and their mean age of marriage was 19.02 ± 4.07 . About 75% have married at 16-25 years. The mean of number of children was 1.59 ± 1.26 . About 68.5% had finished junior high school or high school. Most of them were housewives (89.4%). All the individuals did not answer all the questions of the questionnaire; in every item those whose data were unavailable were excluded; less than 5% in every separate item (Fig 1 and Table 1).

Pearson correlation between knowledge with age was -0.27 ($P.V=0.59$); with the number of children it was -0.134 ($P.V=0.007$), and with education it was $+0.375$ ($P.V<0.001$). The results of Pearson chi-square analysis between knowledge and age of marriage was $+20.82$ ($P.V=0.008$) (Table 2).

A number of 381 (96.5%) believed the regular doing of Pap smear was necessary (positive attitude), with the socio-demographic factors as the sample population. The other 14 (3.5%) knew it as being unnecessary (negative attitude). They all had

Table 2. Distribution of knowledge score about cervical cancer and Pap smear in association with sociodemographic factors in women in Shiraz

		Bad knowledge score: 0-3(%)	Moderate knowledge score: 4-6(%)	Good knowledge score: 7-9(%)
Age group	16-20	8(39.09)	11(52.38)	2(9.52)
	21-25	34(33.66)	57(56.43)	10(9.90)
	26-30	44(35.48)	69(55.64)	11(8.87)
	31-35	32(44.44)	33(45.83)	7(9.72)
	36-40	19(40.42)	27(57.44)	1(2.12)
	41-45	10(43.47)	10(43.47)	3(6.38)
	46-50	3(60)	2(40)	0(0.00)
	51-68	2(33.33)	3(50)	1(16.66)
Age of Marriage	11-15	35(47.94)	35(47.94)	3(4.10)
	16-20	78(37.86)	113(54.85)	15(7.28)
	21-25	23(26.88)	54(58.06)	16(17.20)
	26-30	13(56.52)	9(39.13)	1(4.34)
	31-35	1(33.33)	2(66.66)	0
Number of Children	0-2	117(35.13)	184(55.25)	32(9.60)
	3-4	25(45.45)	28(50.90)	2(3.63)
	5-9	9(69.23)	3(23.07)	1(7.69)
Educational level	Illiterate	8(66.66)	4(33.33)	0
	Primary School	46(61.33)	27(36.00)	2(2.66)
	Junior High School	55(39.85)	76(55.07)	7(5.07)
	High School	38(27.73)	83(60.58)	16(11.67)
	University	4(10.25)	25(64.10)	10(25.64)
Job	Clerk	5(14.70)	18(46.15)	11(28.20)
	Businesswoman	3(37.5)	5(62.5)	0
	Housewife	144(40)	192(53.33)	24(6.66)

low number of children (3 had no child, 9 had one and 2 had two). Their education level was lower than that of the main sample (35% higher than junior high school vs. 44%). One (7.2%) was clerk, 13(92.8%) were housewives and no one was self-employed. Other data were not different from the main sample. Among these 14 participants, 4 (1%) stated their reason as "It is completely unnecessary", 2 (0.5%) as "being annoyed" and the other 8 (2%) did not declare any specific reason for their attitude. About 254 (71.9%) had the correct attitude towards the curability of the cancer (being treatable at early stages) and 28.1% had incorrect attitude (completely treatable/untreatable). The number of people in both pessimistic incorrect attitude (not treatable at all) and optimistic incorrect attitude (being always treatable) was exactly the same (51 vs. 51), (Table 3). Four (1%) had no desire to have more information about this cancer and Pap smear while 388 (99%) were inclined to be more educated.

As to our first question of practice, 229 (57.3%) did pap smear due to health care personnel's advice, 60 (15%) due to the awareness about the

necessity of doing Pap smear, 34 (8.5%) due to having health problems, 25 (6.2%) referred to put IUD, 17 (4.2%) due to their physician's advice, 10 (2.5%) due to the others' advice, and 24 (6.6%) due to a combination of these reasons. Because of the low number of the people who chose other options than "health care personnel's advice", we just analyzed this group. However, it is important to note that in all different socio-demographic groups the first reason of doing the smear was "Advise of the health care centers' personnel" with a great difference to other options. "Having health problem" was the second reason in both the illiterate group and the ones who had a high number of children. For the 2nd question of practice, 370 participants' practice (92% of total) was analyzed with age of marriage. Totally, 72 (19.45%) subjects had desired practice and 298 (80.54%) had undesired practice.

In the first group of practice (newly married women), all had desired practice, while their knowledge was 48% bad, 48% moderate and 4% good. Pearson chi-square between practice and knowledge was just significant in the forth group,

Table 3. Attitude of the women in Shiraz toward the question “Do you think cancer of cervix is treatable?”

	Always treatable	Treatable just at early stages	Not treatable at all
No. (%)	56(14.6)	276(71.9)	52(13.5)
Mean of Age ± SD, SE	30.6±7.58, 1.0	29.9±7.2, 1.0	28.9±6.9, 0.9
Mean of Age of marriage ± SD, SE	18.5±3.9, 0.5	19.2±4.0, 0.2	18.2±4.2, 0.5
Low number of offspring No. (%)	46(12)	232 (60.4)	43 (11.2)
Moderate number of children No. (%)	9(3.3)	37 (9.6)	7 (1.8)
High number of children No. (%)	1(0.2)	7(1.8)	2 (0.2)
Illiterate No. (%)	3(0.7)	1(0.2)	5 (1.3)
Primary school No. (%)	11(2.8)	44 (11.4)	16(4.2)
Junior high school No. (%)	23(6)	91(23.7)	18 (4.7)
High school diploma No. (%)	17(4.4)	103 (26.8)	13(3.4)
University degree holder No. (%)	2(0.5)	37 (9.6)	0
Clerk No. (%)	2(0.5)	30 (7.8)	2 (0.5)
Businesswoman No. (%)	1(0.2)	5(1.3)	2 (0.5)
Housewife No. (%)	53(13.8)	241(62.7)	48 (12.5)

Table 4. The relationship between Practice and Knowledge in women in Shiraz about cervical cancer and Pap smear

		Bad knowledge: No. (%)	Moderate knowledge: No. (%)	Good knowledge: No. (%)	Total
Group I	undesired practice	0	0	0	0
	desired practice	2(28.5)	3(42.8)	2 (28.5)	7(1.9)
Group II	undesired practice	10 (35.7)	17(60.7)	1(3.6)	28(7.5)
	desired practice	7(38.8)	10(55.5)	1 (5.5)	18(4.8)
Group III	undesired practice	43(37.7)	62(54.3)	9(7.9)	114(30.8)
	desired practice	7(23.3)	17(56.6)	6 (20)	30(8.1)
Group IV	undesired practice	65(41.6)	80(51.3)	11(7)	156(42.1)
	desired practice	2(11.8)	11(64.7)	4(23.5)	17(4.6)
Total		136(36.7%)	200(54)	34(9.1)	370(100)

Group I: 0-1 year has passed from marriage
 Group II: 2-3 years have passed from marriage
 Group III: 4-9 years have passed from marriage
 Group IV: more than 9 years have passed from marriage

8.86 (P.V=0.01). Totally, 136 (36.7%) had bad knowledge, which 118 (86.7%) had undesired practice and 18 (13.2%) had desired practice. Among the 200 (54.0%) participants who had moderate knowledge, 159 (79.5%) had undesired practice and 41 (20.5%) had desired practice. Among 34 (9.2%) participants who had good knowledge, 21 (61.7%) had undesired practice and 13 (38%) had desired practice (Table 4).

All the participants with desired practice considered doing the smear as necessary. Among the ones who had undesired practice, 280 (95.2%) participants knew it as necessary and 14 (4.7%) knew it as unnecessary. Among the group of desired practice, 10 (14%) believed this cancer was always curable, 56 (78.9%) believed it was curable just at early stages, and 5 (7%) believed it was not curable

at all. Also, in this group 69 (98.5%) were inclined to be more educated and just 1 (1.4%) did not have a tendency for more information. Among those with undesired practice, 41 (14.4%) believed the cancer was always treatable, 198 (69.7%) stated that was treatable at early stages and 46 (16.1%) had the view of being not treatable at all (Table 5). Moreover, in this group 289 (99%) were inclined to have more information and 3 (1%) did not have a tendency to know more.

Discussion

Our population is a small society of Iranian women (34630000, 49.1% of all the country population) [11]. The median age of Iranian women is very similar to our sample (27.2 vs. 29.95±7.32) [12]. The total fertility rate for Iranian women is 1.71

children [12], close to mean of number of children in ours. The total knowledge score is in the lower middle extreme. We concluded that 37.7% had low knowledge, 53.6% moderate knowledge and 8.7% good knowledge. Some surveys indicate that knowledge in the developing countries is low [13-15]. However, a survey among Nigerian female health workers reports their knowledge about cervical cancer and Pap smear was 65 and 64 out of 100, respectively. These are higher than our findings, probably because that research is conducted among health workers, not the ordinary women [16]. Sadighi found that 36% of her sample did not know the right time for doing Pap smear [13] which is very near to ours (36.9%).

Knowledge

Based on the results, we could not find any significant correlation between knowledge and age. Analyzing the good knowledge group, we understood that the percentage of young aged women is more and this decreases with increasing age in a way that a significant difference between those under 35 and 35 to 50 years old can be seen. However, it is interesting that the percentage of the postmenopausal group is even more than that in the young aged groups. Also, these women have the lowest percentage in the bad knowledge group compared to other ages. The knowledge mean score in this group is more than the total average and also each separate group. There is a sensible shift of age groups to the good knowledge group with an increase in age. So, this group's knowledge level is better than all the other groups. In the moderate knowledge group, there is no important difference between those lower than 35 and 35-50. Also in the bad knowledge group, the percentage of the young aged women is less than the middle aged women. To best of our knowledge, no previous research has been done with these small aging groups, making this survey a reference for more detailed information. The researchers believe that as pre-marriage counsels are mandatory before marriage in Iran, women who are at age of marriage are appropriately educated about the cancer and Pap. While as years pass, they become more care free and after becoming menopause, their main reason for visiting gynecologic health centers converts from reproductive care to neoplastic care, and this affair have made them more knowledgeable. Likewise, Barghouti found that knowledgeable women were mostly under 35 and had more than secondary education [17]. While in the developed countries like Austria, in 2005, 95.7% of 20-69 year old women

had knowledge about screening; it had been 94% in 1995 [18]. Strong positive relationships between knowledge with the age of marriage and education and strong negative relationship with number of children were found. The group of low number of children had the highest percentages in the moderate and good knowledge groups and the least in the bad knowledge groups. The mean knowledge score was the highest among the group of low number of children (4.18%) and the lowest in the group of high number of children (3.07%). There was no illiterate in the good knowledge group. The university degree holders had the lowest percentage in the bad knowledge group and the highest percentage in the good knowledge. The knowledge mean score increases from the illiterates (3) to the university degree holders (5.35). The significance of comparison of knowledge score of university degree holders was less than 0.001 with all the other groups except high school diploma holders. These two latter groups had mostly moderate to good knowledge (P-value=0.06). Women with junior high school education were mostly in the moderate to bad knowledge category. Those with primary high school education or the uneducated ones have mostly bad knowledge; these two latter groups are mostly the same and there were no statistical difference between their knowledge scores. We believe that this can be due to the fact that people become more familiar with health and diseases with higher education and also the importance of being healthy is the thing which is more emphasized in higher educational fields. We also believe that women with more children are more involved with the reproductive health or training problems if visiting health centers rather than screening programs. The knowledge mean score among clerks was more than the other women (P-Value=0.008). This group had the highest percentage in the good knowledge category and the lowest in bad knowledge category. Housewives and businesswomen were similar with no significant statistical comparison. None of the businesswomen was in the good knowledge category. Researchers believe that education about screening programs done in offices has made this significant difference, so we believe that health centers should institutionalize these programs among other jobs too.

Attitude

The people who considered doing the test as necessary, who intended to get more information, and who had no tendency for more information, were all similar to the mother population. Just 3.5%

did not believe doing Pap necessary, who are previously discussed. It was found that as people were more educated, they had more correct attitude toward the cancer (P -value = <0.001). About the incorrect attitude towards curability of the cancer, an interesting point is that as educational level increases, the subject becomes more optimistic than being pessimistic (more people knew it to be always treatable than not being treatable at all), Pearson chi-square = 37.4 (sig 2 sided <0.001). We should also note that all the newly married women had the attitude of treatability of this cancer at early stages, and all were inclined to know more about the cancer and Pap smear. The researchers again want to highlight the efficient role of mandatory pre-marriage counsels. In most of the surveys, attitude has been reported to be positive [14, 19, 20]. A positive correlation between age [14] and job [14, 21] and education [21] with attitude has been shown, but no correlation was found between the number of children and attitude [21]. Women considered physicians as the most important person to give them education (57%) and then health centers' personnel (23%) [21]. A survey in Jordan reports that the reason women have negative attitude toward the test is because of the fear of the procedure and also the result [17], while in our survey just two participants reported being annoyed.

Practice

As the gap between the one's age and her age of marriage increased, the practice definitely languished; none of the newly married women comparing 90.2% of the ones who had spent more than 9 years of their marriage had undesired practice. The other groups between these two extremes were just ascending and step-like. The age of marriage had a negative correlation with practice in our survey. However, in a general aspect irrespective of the age of marriage for practice, there was also a positive and significant correlation between knowledge and practice. We can assume that as knowledge improves, practice becomes better. It is notable that in both desired and undesired practice groups, the percentage of the women with the attitude of "always being treatable" (the false optimistic attitude) was just the same. The researchers do believe that having a correct attitude affect practice more than an incorrect one and also an optimistic attitude makes one have better practice than a pessimistic attitude. The women who knew doing the regular test unnecessary, all had undesired practice. In an Iranian survey 58% had low and 39% had moderate practice [14]. In the developing

countries, it is mostly less than our findings, i.e. 2%, 14.5%, 17% [14, 22, 23]. However, in the developed countries practice is much better than ours, i.e. 68% in the U.S. [24], and 52.6% in Austria [18]. We found that 34% had never done the test. Other surveys reveal so much variable percentages, e.g. in the developing countries: 45% [14], 50% [23], 60% [17], about 85% in Nigerian female health workers [16] and even 92% in Nigeria. [15] While in the developed countries it is 16% in America, [24] 11% in Manchester (who are mostly the elderly), [25] and 24% in Austria 1995 and 12% in Austria 2005 [18]. American article (2003) shows, 43% of the elderly women (65 and over) of the U.S. have had one pap in the last three years so they know doing the test is satisfactory and common among elderly women (much different from our society). However, it reports that just 2-3% of the smears taken from ages over 60 have reported being abnormal; meaning it is not very beneficial to focus on these age ranges [26]. This is also important to note that the method of defining desired practice in our survey is based on the number of the attendances in the gap between one's current age and her age of marriage and then comparing it with the number she had to come, therefore accomplishing the desired practice is more difficult than just with the simple number of attendances of doing Pap smears without regarding to age, as like most of the other surveys. An Iranian survey suggests every three year screening of the 20-65 year old women can prevent the cancer up to 90% [23]. The correlation between knowledge and practice is confirmed in many surveys [16, 17, 25, 27, 28]. Some other studies have found the same correlation between age and practice [17, 23, 24, 29, 30]. From our results it can be understood that practice has a weak correlation with attitude. It is important to note that just 4% came for Pap smear due to physicians' advice. This can obviously demonstrate the so expected preventive role of the physician, moreover their role in diagnosis and treatment, which has become more in shadow. The distribution of sociodemographic pattern of people who came following health care workers advice is the same as the mother population with no important difference. As we found, most researches reveal the health workers as the first source of information [15, 22, 31]. So, concerning their vital role in informing the public, it is highly recommended to put a special force on this group's education about their role. It seems that we could not have a good coverage on the age group under 20s and above 40s (13.77% of the sample population), while the age distribution of 15-19 and 40-69 year old

Iranian women is approximately 33% of Iranian women population [11]. So, it is possible to say that we could not save the same pattern of the country population and our sample mostly covers 20-40 year old women. This might probably be justifiable with the fact we found in our survey, i.e. practice of women is dramatically reduced with the increase of age. So, this population refers less to the health centers to do Pap smear and so their coverage from randomizing (the way this survey was supposed to be done) does not look possible. To best of our knowledge, no other research has been done on assessing knowledge, attitude and practice and their integrations previously in Iran and this is one of the prominent points of this assay.

Conclusion

This cancer is definitely mortal for individuals and cost for health systems while can be removed easily with the cheap, simple screening method. The aim of improvement of knowledge and attitude should be improvement of practice. Now, considering the moderate level of knowledge, positive attitude but still weak practice, and the weak relationship between attitude we strongly suggest to increase knowledge in women who are middle aged, housewives, low educated, have more than four children and who have married at an early age to increase their practice and also to improve practice in women with undesired practice (despite some having good knowledge); the ones who more than nine years have spent from their age of marriage. The best way to invite them is through health care personnel. This affair can be facilitated by setting free screening units through available infrastructures of our society, like shopping centers, parks and restaurants. Insist on regular follow up should be highlighted.

Acknowledgement

The authors would like to thank Dr.Mosallaei and Dr.Shokrpour at Center for Development of Clinical Research of Shiraz Nemazee Hospital for their editorial assistance and also all the participants cooperated with us.

Conflicts of Interest

None

Authors' Contributions

The design, collection of data, interpretation and writing the manuscript were done by the two authors together.

References

1. World Cancer Research Fund/ American Institute for Cancer Research. Food, Nutrition, Physical Activity, and the Prevention of Cancer: A Global Perspective. Washington, DC: AICR, 2007.
2. National Cancer Registry Report [Compact Disk]. Islamic Republic of Iran Ministry of Health and Medical Education, Deputy of Health. Tehran; Feb, 2005.
3. Kumar V, Abbas A, Fausto N, Mitchell R. Robbins Basic Pathology. 8th ed. Philadelphia: W.B. Saunders Elsevier, 2007.
4. Behdash N, Tehranian A. An overview of screening tests in cervical cancer. Journal of Medical Council of I.R.I. Spring 2001; 19(1):49-57.
5. Azizi F, Janghorbani M, Hatami H. Epidemiology and Control of Common Disorders in Iran (Secound Edition): Khosravi Institute Publication, Tehran, 2004 Winter, ISBN 964-8565-14-7:232-5.
6. Monsonégo J. Prevention of cervical cancer screening progress and perspectives. Presse Med. 2007 J; 36: 92-111.
7. Deputy of Health of Iranian Ministry of Health and Medical Education. Guideline for doing pap smear, Managed health care manual (33). No. 2/148659 Sh.
8. Harland Austin. An epidemic averted through medical screening. J Med Screen .2005; 12:1-2.
9. Lynge E, Clausen L, Guignard R, Poll P. What happens when organization of cervical cancer screening is delayed or stopped? J Med Screen 2006; 13:41-6.
10. Jamison DT, Mosley WH, Measham AR, Bobadilla JL. Disease control priorities in developing countries. World Bank Report 12384. New York: Oxford, 1993.
11. www.sci.org.ir/portal/faces/public/sci/sci.negahbeiran/sci.population. Accessed August 14th, 2009.
12. www.cia.gov/library/publications/the-world-factbook/geos/ir.html. Accessed August 14th, 2009.
13. Sadighi J, Vahdani Nia MS, Khodabandeh A, Jarvandi F. Cervical cancer: Knowledge of women and the effect of educational materials. Payesh Journal January 2005; 4(1).
14. Khojasteh F. The study of knowledge, attitude and practice about cervical cancer and pap smear of women that visited zahedan health center clinics. Scientific Medical Journal. August 2004; (41):1-9.
15. Ezem BU. Awareness and uptake of cervical cancer screening in Owerri, South-Eastern Nigeria. Ann Afr Med. 2007; 6(3):94-8.
16. Gharoro EP, Ikeanyi EN. An appraisal of the level of awareness and utilization of the pap smear as a cervical cancer screening test among female health workers in a tertiary health institution. Int J Gynecol Cancer. 2006; 16(3):1063-8.
17. Barghouti FF, Takruri AH, Froelicher ES. Awareness and behavior about Pap smear testing in family medicine practice. Saudi Med J. 2008; 29(7):1036-40.
18. Haidinger G, Waldhoer T, Vutuc C. Self-reported Pap smear screening in Austria. Wien Med Wochenschr .2008; 158/7-8: 222-6.
19. Oscarsson MG, Wijma BE, Benzein EG. 'I do not need to... I do not want to... I do not give it priority...' why

women choose not to attend cervical cancer screening. *Health Expect.* 2008 Mar; 11(1):26-34.

20. Nanbakhsh H, Salarilak S, Islamloo F, Aglemand S. Assessment of women's satisfaction with reproductive health services in Urmia University of Medical Sciences. *Eastern Mediterranean Health Journal*; 2008 14(3): 605-14.

21. Baghiani Moghadam M.H. Survey on knowledge, attitude and practice of 15-49 years age group married women related to Pap smear test in Yazd city in 2001. *Journal of Mazandaran University of Medical Sciences* Fall .2003; 13(40):79-85.

22. Enjezab B, Faraj Khoda T, Mojahed SH, Bokaei M. Barriers and motivators related to cervical and breast cancer screening. *Journal of Shahid Sadoughi University of medical sciences and health services* fall. 2004; 12(3): 14.

23. Jalalvandi M, Khodadoostan M. Married women and pap smear, what they know? *Iran Journal of Nursing* .2005; 41-42(18): 139-44.

24. Lee-Lin F, Pett M, Menon U, Lee S, Nail L, Mooney K, Itano J. Cervical cancer beliefs and Pap test screening practices among Chinese American immigrants. *Oncol Nurs Forum*. 2007 Nov; 34(6):1203-9.

25. Webb R, Richardson J, Pickles A. A population-based study of primary care predictors of non-attendance for cervical screening. *J Med Screen*. 2004; 11:135-40.

26. Sirovich BE, Gottlieb DJ, Fisher ES. The burden of prevention: downstream consequences of Pap smear testing in the elderly. *J Med Screen*. 2003; 10:189-95.

27. Dignan M, Michielutte R, Blinson K, Wells HB, Case LD, Sharp P, et al. Effectiveness of health education to increase screening for cervical cancer among eastern-band Cherokee Indian women in North Carolina. *J Natl Cancer Inst*. 1996 Nov 20; 88(22):1670-6.

28. Perry MA. How can the uptake of cervical cytology screening be improved. *Nurs Stand*. 2001 Nov 28th - Dec 4th; 16(11):33-6.

29. Hernandez-Hernandez DM, Linaldi-Yépez F, Apresa-García T, Escudero-de los Ríos P, Alvarado-Cabrero I, Ornelas-Bernal LA, et al. Associated factors for women's non-compliance for cervical cancer screening. *Rev Med Inst Mex Seguro Soc*. 2007; Jul-Aug, 45(4): 313-20.

30. Wang PD, Lin RS. Sociodemographic factors of Pap smear screening in Taiwan. *Public Health*. 1996 Mar; 110(2):123-7.

31. Gichangi P, Estambale B, Bwayo J, Rogo K, Ojwang S, Opiyo A, Temmerman M. Knowledge and practice about cervical cancer and Pap smear testing among patients at Kenyatta National Hospital, Nairobi, Kenya. *Int J Gynecol Cancer*. 2003; 13(6):827-33.