Original Article

Low health literacy, poor knowledge, and practice among Turkish women patients undergoing cervical cancer screening

ABSTRACT

Objective: The objective of this study is to evaluate health literacy level, cervical cancer knowledge, and practice among women patients undergoing screening.

Materials and Methods: A cross-sectional study was conducted among 455 women family health center patients. Health literacy level was evaluated by Rapid Estimate of Adult Literacy in Medicine. Patients characteristics, health behaviors, cervical cancer knowledge, and practice were assessed by a questionnaire form. Chi-square test and logistic regression analyses were applied.

Results: This study has found that 19.3% women were in adequate health literacy level and 80.7% of were in low (inadequate or marginal) level. Health literacy levels were showed significant differences by age, education status, employment, self-perception of health, health condition and having health profession, smoking status, physical activity, body mass index, taking health care, skills and concern on materials. Inadequate health literacy was significantly higher among women patients with poor cervical cancer knowledge and practice. Based on binary regression analyses, adequate health literacy was significantly associated with younger ages.

Conclusion: Adequate health literacy was poor among women patients. Health literacy levels were affected by patient characteristics, health behaviors, and cervical cancer knowledge and practice.

KEY WORDS: Cervical cancer, health knowledge, health literacy, practice, women

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INTRODUCTION

Health literacy is a well-rounded phenomenon within the field of health-care system and is defined a capacity for obtaining, processing, understanding, and navigating health information and utilization services to take relevant health decisions.[1] It is fundamental to implement various tasks related with health such as understanding prospectus correctly, reading pamphlets of disease prevention, filling out medical forms, and communication with physician.[2-4] A key aspect of health literacy is preventive health care. Evidence suggests that low health literacy has a crisis role on utilization low level of preventive health and being late to call health care in the symptomatic period.[5] Cervical cancer is a substantially preventable disease, but it is estimated that in worldwide, 266 000 women die due to cervical cancer each year.[6] According to Globocan 2012 statistics, it is the 12th cancer among Turkish women.[7] The issue of low health literacy has received considerable critical attention due to prevention and early diagnosis of cancers. In addition, the main challenge faced by many researchers is the low interest or having no desire to early diagnosis of cervical cancer.[8,9] There is little published data on health literacy in Turkey, and all of them showed inadequate health literacy commonly.[10-12] When taking into consideration cervical cancer prevalence (5-year prevalence was 3%),[7] investigating health literacy among women is a continuing concern within cervical cancer screening in our country.

This study aimed to determine health literacy levels, cervical cancer knowledge and practice among women patients undergoing cancer screening.

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MATERIALS AND METHODS

This cross-sectional study was conducted between November 2015 and January 2016 among women patients who admitted to the five urban family health centers (FHC) in Çorum city-located in Middle Black Sea region of Turkey. FHC provide primary care services to the community. Target population was women patients aged between 30 and 65. In registration desk, women patients were recruited and screened by ten female nursery students. Çorum is one of the cities that lets in immigrants continuous, so research patients were selected with Turkish-speaking. Primary inclusion criteria for the pap-smear test were being nonpregnant, had no history of total hysterectomy due to benign tumor, being literate and had no psychiatric, hearing and vision problems. Patients were asked to a 10-min face–to-face interview in a special room immediately before cervical cancer screening. Before interview, verbal and written study consent was taken, and patients were told that we were studying what patients knew about cervical cancer and screening age and if ever they had a pap-smear test within the past 5 years. As an important constituent of the study, we also told them to respond a list of medical reading test. Eligible and volunteer 455 women who matched the selection criteria were identified as study sample.

The interview configured on a 44-item questionnaire which was prepared by the researcher according to literature. To try out the validity of questionnaire, a pilot study was based on 20 patients. Data accessed by four sectional questionnaire as follows; patient's demographics (age, education, marital and employment status, monthly income and self-perceived health, health conditions, familial cancer history, having any health profession among family members or relatives), health behaviors (self-report of smoking, using alcohol, physical activity, taking health care, utilization from health services, skills and interest on medical forms), knowledge and practice on cervical cancer and health literacy level. Height and weight were measured for body mass index (BMI) calculations.

Cervical cancer knowledge and screening

In Turkey, National Standards of Cervical Cancer Screening Programme (NSCCSP) was designated for screening.[13] In NSCCSP, women aged 30–65 years were advised to have a Pap-smear test and test should be repeated in every 5 years.

With the purpose of cervical cancer knowledge, patients were asked to hear of pelvic-examination, Pap-smear test, human papillomavirus (HPV) vaccine, know the role of HPV infections, and Pap-smear screening age.

To identify cervical cancer screening, the patients were asked with the question "Have you ever had a Pap-test within last 5 years"?

Health literacy

To assess health literacy levels, Rapid Estimate of Adult Literacy in Medicine (REALM) was used. The REALM is defined as a robust tool to measure health information (Cronbach's $\alpha = 0.99$).[14] It is a reading and recognition test in health-care field and consisted of 66 health-related words. For the estimation of health literacy level, three basic reading grade was generated from total score (0–66) as follows adequate, marginal, and inadequate.

- Adequate level: Scores ≥61, it indicates high school level (≥9th), patients are able to read most of the educational materials
- Marginal level: Scores between 45 and 60, it indicates 7th–8th level, patients can cope with many educational materials
- Inadequate level: Scores ≤44, it indicates 6th and under level, patients may not read medication instructions so visual and auditory materials should be used.

The tool was translated into Turkish version by Ozdemir *et al*.[11] Furthermore, in this study, the internal consistency of the REALM was found as good (Cronbach's $\alpha = 0.96$).

After interview, patients were taken to screening by educated professionals from the Centers of Cancer Early Diagnosis, Screening and Education (KETEM) which was provider of population-based cancer screening in Turkey.

Statistical analysis

Statistical analysis was performed using SPSS, version 17.0. Descriptive data were generated for demographic variables. For categorical variables including health literacy levels, demographic characteristics, health behaviors and responses to cancer knowledge and practices, and Pearson Chi-square test were used. To estimate independent variables on adequate health literacy level, Binary Logistic Regression analyses was used. In these analyses, health literacy levels were categorized again as adequate and below-adequate health literacy level. $P < 0.05$ was considered as statistically significant.

Ethical approval

This study was conducted in accordance with Helsinki Principles, and ethical approval was taken from Hitit University Faculty of Medicine.

RESULTS

During the study period, 577 women between the ages 30 and 65 years were enrolled from FHC, 42 women were not willing to participate, 63 women were pregnant, 17 women had a hysterectomy. By the end of the study period, data had been collected from 455 patients. The overall response rate was 78.9%. Table 1 provides characteristics of women. In the whole group, 44.2% were aged ≥40, and the mean age was 40.2 ± 8.7 years. The majority of women (70.8%) were under the high school level and 81.5% were homemaker. Over half of indicated that they had good health.

Table 1: Characteristics of patients

Characteristics (*n*=455)	*n* (%)
Age (years), mean±SD	40.2±8.7
30-34	149 (32.7)
35-39	105 (23.1)
≥40	201 (44.2)
Education	
Literate	58 (12.7)
Primary	167 (36.7)
Secondary	97 (21.4)
High school and over	133 (29.2)
Marital status	
Divorced/widowed	21 (4.6)
Married	434 (95.4)
Employment status	
Homemaker	371 (81.5)
Employed	84 (18.5)
Monthly income ($)	
<500	33 (7.3)
500-1000	275 (60.4)
>1000	147 (32.3)
Perception of health	
Good	239 (52.5)
Average/poor	216 (47.5)
Health condition	
Any chronic disease	82 (18.0)
Familial cancer history	
Cervical cancer in family	5 (1.1)
Health profession	
Having any health profession in family or relatives	155 (34.1)
REALM (mean±SD)	46.34±14.17
Health literacy levels	
Inadequate (scores ≤44)	173 (38.1)
Marginal (scores 45-60)	194 (42.6)
Adequate (scores ≥61)	88 (19.3)

SD=Standard deviation, REALM=Rapid Estimate of Adult Literacy in Medicine

Approximately one of five women had any chronic condition. Of the 455 women, 5 reported that they had family history of cervical cancer. REALM data ranged from 12 to 66 in the whole group, and the mean scores was 46.34 ± 14.17. According to REALM scores, the majority of women were identified as low health literacy level (38.1% of were in inadequate and 42.6% were in marginal level).

Table 2 presents women characteristics by health literacy level. Women with inadequate health literacy were more likely to be older, had less than high school education, were homemaker ($P < 0.001$). Conversely, among women who had good health perception, adequate health literacy was found significantly more often ($P < 0.05$). The presence of any chronic disease was effective on health literacy levels ($P < 0.05$). Women who had no health profession among family members or relatives, inadequate health literacy was significantly more frequent ($P < 0.05$). Marital status and monthly income showed no significant differences ($P > 0.05$).

Table 3 shows comparisons of women health behaviors by health literacy level. Approximately every-fifth of women were current smokers, 6.4% were current alcohol users and 45.3% had sedentary life. Inadequate health literacy was significantly more likely among women that never having smoked and never having physical activity ($P < 0.05$). However, BMI was found significantly associated with health literacy level ($P < 0.05$). Over half of the women were overweight and obese. Among those, inadequate health literacy was more frequent. Women who reported that they were not able to read and fill out medical forms on their own, women who said that they threw out medical forms without reading inadequate health literacy was significantly more common ($P < 0.001$).

Table 4 provides women knowledge and practice about cervical cancer by health literacy level. Compared to those with adequate health literacy level, women with inadequate health literacy were more likely to report that never heard of Pap-test and HPV vaccine ($P < 0.05$). No differences were observed by the role of HPV infection on cervical cancer and its transmission ($P > 0.05$). Furthermore, women with inadequate health literacy were significantly less likely to indicated that women aged 30–65 would have a pap-test in every-5 years. When asked whether, ever had a pelvic-examination, over half of said "no" and in response to question ever have a pap-test in the last 5 years, 78.5% of the patients, reported that "no." Women with inadequate health literacy level were less likely to had pelvic-examination and also a Pap-test within the last 5 years compared to those with adequate health literacy level ($P < 0.05$).

Differently, from other studies, women were asked to indicate whether they heard medical terms related with cancer screening by order of lesion, polyp, screening, tumor, prognosis, biopsy, and metastasis. A minority of indicated that they had heard of lesion (18.5%), polyp (8.1%), metastasis (4.4%), and prognosis (2.2%) before.

Independent variables on adequate health literacy level were shown in Table 5. As shown in Table 5, adequate health literacy level was significantly higher among women with younger ages. Compared to those with aged ≥40 years, it was 2.21 times higher in 30–34 years of age group and 1.81 times higher in 35–39 years of age group.

DISCUSSION

Although there is bilateral synergism between health literacy and preventive health practices, in female population, inadequate health literacy can be a barrier to navigate knowledge and practice for cancer screening.[9,15,16] In Turkey, while some researches have been carried out on cervical cancer knowledge and practice,[17-19] no studies have been found which handled health literacy and cervical cancer. This is the first Turkish study to investigate the effects of health literacy levels on cervical cancer knowledge and practice on women.

The present study demonstrated that low health literacy (<9 grade) was widespread (80.7%) among women [Table 1]. These results are in line with those of previous studies conducted among Serbian and American women.[9,20] In

Table 2: Patients characteristics by health literacy level

Characteristics	All (*n*=455), *n* (%)	Adequate (*n*=88), *n* (%)	Marginal (*n*=194), *n* (%)	Inadequate (*n*=173), *n* (%)	χ^2/*P*
Age (years)					
30-34	149 (32.7)	38 (43.2)	74 (38.1)	37 (21.4)	22.748/0.000
35-39	105 (23.1)	23 (26.1)	44 (22.7)	38 (22.0)	
≥40	201 (44.2)	27 (30.7)	76 (39.2)	98 (56.6)	
Education					
Less than high school	322 (70.8)	63 (71.6)	108 (55.7)	151 (87.3)	44.216/0.000
High school and over	133 (29.2)	25 (28.4)	86 (44.3)	22 (12.7)	
Marital status					
Divorced/widowed	21 (4.6)	3 (3.4)	12 (6.2)	6 (3.5)	1.894/0.388
Married	434 (95.4)	85 (96.6)	182 (93.8)	167 (96.5)	
Employment status					
Homemaker	371 (81.5)	67 (76.1)	147 (75.8)	157 (90.8)	15.744/0.000
Employed	84 (18.5)	21 (23.9)	47 (24.2)	16 (9.2)	
Monthly income ($)					
<500	33 (7.3)	6 (6.8)	12 (6.2)	15 (8.7)	3.693/0.449
500-1000	275 (60.4)	47 (53.4)	123 (63.4)	105 (60.7)	
>1000	147 (32.3)	35 (39.8)	59 (30.4)	53 (30.6)	
Perception of health					
Good	239 (52.5)	49 (55.7)	117 (60.3)	73 (42.2)	12.467/0.002
Average/poor	216 (47.5)	39 (44.3)	77 (39.7)	100 (57.8)	
Health condition					
Presence of chronic disease	82 (18.0)	14 (15.9)	27 (13.9)	41 (23.7)	6.252/0.044
Health profession					
Have no health profession among family members or relatives	300 (65.9)	57 (64.8)	114 (58.8)	129 (74.6)	10.234/0.006

Table 3: Patients health behaviors by health literacy level

Health behaviors	All (*n*=455), *n* (%)	Adequate (*n*=88), *n* (%)	Marginal (*n*=194), *n* (%)	Inadequate (*n*=173), *n* (%)	χ^2/*P*
Smoking status					
Never	307 (67.5)	52 (59.1)	124 (63.9)	131 (75.7)	10.749/0.030
Former	53 (11.6)	15 (17.0)	26 (13.4)	12 (6.9)	
Current	95 (20.9)	21 (23.9)	44 (22.7)	30 (17.3)	
Alcohol use					
None	426 (93.6)	86 (97.7)	183 (94.3)	157 (90.8)	5.037/0.081
Current	29 (6.4)	2 (2.3)	11 (5.7)	16 (9.2)	
Physical activity					
Never	206 (45.3)	37 (42.0)	75 (38.7)	94 (54.3)	12.036/0.017
Sometimes	181 (39.8)	35 (39.8)	92 (47.4)	54 (31.2)	
Regular	68 (14.9)	16 (18.2)	27 (13.9)	25 (14.5)	
BMI					
<18.5	19 (4.2)	4 (4.5)	9 (4.6)	6 (3.5)	17.306/0.002
18.5-24.9	206 (45.3)	39 (44.3)	107 (55.2)	60 (34.7)	
≥25.0	230 (50.5)	45 (51.2)	78 (40.2)	107 (61.8)	
Health care					
No visit to physician for check-up in last year	148 (32.5)	36 (24.3)	80 (54.1)	32 (21.6)	27.573/0.000
Utilization health services					
No apply to family physician primarily	263 (57.8)	54 (20.5)	118 (44.9)	91 (34.6)	3.103/0.212
Skills on medical forms					
Read and fill out by others help	147 (32.3)	23 (26.1)	17 (8.8)	107 (61.8)	119.745/0.000
Never understand written forms	147 (32.3)	23 (26.1)	17 (8.8)	107 (61.8)	
Interest on medical forms					
Throw out forms without reading	50 (11.0)	12 (13.6)	7 (3.6)	31 (17.9)	133.649/0.000

BMI=Body mass index

addition, the current study support previous researches which links health literacy and demographic characteristics.[9,20-22] Women with inadequate literacy were more likely to be older, have less education and homemakers [Table 2]. A possible explanation for this might be that a low level of educational years, cognitive decline, increased risk of impaired physical health with aging and social unconscious on the role of gender [Tables 2-5].

Similarly, prior studies that have noted the importance of health literacy on health perception and physical health.[20,21] Women with inadequate health literacy have more likely to poor health perception and chronic condition. A chain of factors might be explained by lack of health knowledge, communication handicaps with health professionals, do not acquire a habit of taking health care regularly. As a matter of fact that, results from Tables 2 and 3 supported these

Table 4: Cervical cancer knowledge and practice by health literacy level

Cancer knowledge and practice	All (*n*=455), *n* (%)	Adequate (*n*=88), *n* (%)	Marginal (*n*=194), *n* (%)	Inadequate (*n*=173), *n* (%)	χ^2/*P*
Ever heard of pelvic-examination?					
Yes	158 (34.7)	33 (37.5)	56 (28.9)	69 (39.9)	5.269/0.072
No	297 (65.3)	55 (62.5)	138 (71.1)	104 (60.1)	
Ever heard of Pap-smear test?					
Yes	175 (38.5)	39 (44.3)	86 (44.3)	50 (28.9)	10.778/0.005
No	280 (61.5)	49 (55.7)	108 (55.7)	123 (71.1)	
Ever heard of the HPV vaccine?					
Yes	135 (29.7)	26 (29.5)	83 (42.8)	26 (15.0)	33.760/0.000
No	320 (70.3)	62 (70.5)	111 (57.2)	147 (85.0)	
HPV infection plays a role in the emergence of cervical cancer					
Yes	160 (35.2)	37 (42.0)	71 (36.6)	52 (30.1)	3.981/0.137
No	295 (64.8)	51 (58.0)	123 (63.4)	121 (69.9)	
HPV infection is sexually transmitted					
Yes	172 (37.8)	34 (38.6)	84 (43.3)	54 (31.2)	5.713/0.057
No	283 (62.2)	54 (61.4)	110 (56.7)	119 (68.8)	
Women aged 30-65 have a Pap test in every 5 years					
Yes	280 (61.5)	57 (64.8)	145 (74.7)	78 (45.1)	34.462/0.000
No	175 (38.5)	31 (35.2)	49 (25.3)	95 (54.9)	
Had a pelvic-examination?					
Yes	188 (41.3)	35 (39.8)	67 (34.5)	86 (49.7)	8.793/0.012
No	267 (58.7)	53 (60.2)	127 (65.5)	87 (50.3)	
Had a Pap test within last 5 years?					
Yes	98 (21.5)	27 (30.7)	47 (24.2)	24 (13.9)	11.198/0.004
No	357 (78.5)	61 (69.3)	147 (75.8)	149 (86.1)	

HPV=Human papillomavirus

Table 5: Binary logistic regression of the independent variables on adequate health literacy level

Variables	Adequate health literacy level (*n*=367)		*P*
	OR	95% CL	
Age (years)			0.015
30-34	2.21	1.28-3.82	0.005
35-39	1.81	0.97-3.34	0.059
≥40 (reference)	1		

Variables: Age, education, employment status, perception of health, health condition, smoking status, BMI, physical activity, health care, skills on medical forms. BMI=Body mass index, OR=Odds ratio, CL=Confidence level

explanations [Table 2]. However, one anticipated finding was that the role of health professionals on health literacy level. Inadequate health literacy level was significantly higher in women who had no health profession among family members. This finding suggests that health professionals are the main dynamics of health knowledge [Table 2].

Low health literacy influence individuals motivation adversely in terms of self-care behaviors, knowledge, and skills.[21-25] In addition, the findings of the current study is line with the earlier studies. Inadequate health literacy was significantly higher among nonsmokers, sedentary, and overweight/obese women. Yet, low health literacy was significantly higher in patients who did not take any health care in the last year. The most important relevant finding was that inadequate health literacy was associated with poor skills and concern on medical forms [Table 3]. Several reports have shown low level of knowledge and practice about cervical cancer among Turkish women.[17-19] Together with those reports, the most obvious finding to emerge from this study, inadequate health literacy was significantly associated with poor cervical cancer knowledge and practice [Table 4]. This results are also consistent with international studies indicating that cancer knowledge was low and screening tests were less used among individuals with low health literacy.[25-27]

CONCLUSION

This study showed that health literacy was low among women patients. Patients with adequate health literacy were youngers, highly educated, employed, those with good self-health. Contrary to these, inadequate health literacy was common among those with chronic disease, had no health profession. Nonsmokers, sedentaries, those with overweight/obese, had no health care, those with low skills of materials. Inadequate health literacy significantly associated with poor cervical cancer knowledge and practices.

What is already known on this subject?

The investigation of studies has shown that cervical cancer knowledge and practice was poor among Turkish women.

What this study adds?

We now know as a result of this study that adequate health literacy was poor among Turkish women and low health literacy was associated with poor cervical cancer knowledge and practice.

Practice implications

The current study highlights the importance of health literacy on cervical cancer and practice. Public health campaigns are

needed to extend health literacy within preventive health services. National programs on cervical cancer screening should be enlarged and revised, also should be focused on high-risk women.

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Conflicts of interest
There are no conflicts of interest.

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