Original Article

The relationship between health literacy and patterns of drug use in pregnancy

Yilda Arzu Aba[1], Tulay Basak[2], Sevcan Sevimli[3]

[1]Department of Nursing, Faculty of Health Sciences, Bandırma Onyedi Eylul University, Bandırma/Balıkesir, [2]University of Health Sciences Turkey, Gulhane Faculty of Nursing, Ankara, [3]Department of Nursing, Health Sciences Faculty, Usak University, Uşak, Turkey

ORCID:
Yilda Arzu Aba: https://orcid.org/0000-0001-6660-4964

Abstract

Context: Drug use during pregnancy is an important issue that is frequently encountered and difficult to decide on as it is closely related to the health of both the mother and the fetus.

Aim: This study was conducted to identify the relationship between the health literacy level and drug use in pregnant women.

Settings and Design: This was a descriptive cross-sectional study in a state hospital's outpatient department in Turkey in 2017.

Materials and Methods: In this study, 469 pregnant women were included with simple random sampling. The data collection form included sociodemographic characteristics and drug use behavior of pregnant women and the Health Literacy Scale (HLS).

Statistical Analysis: Descriptive statistics, *t*-test, Mann–Whitney *U*, Kruskal–Wallis, ANOVA, Bonferroni, and multiple regression analysis were used.

Results: The mean HLS subdimension scores were access 21.7 ± 3.4, understanding 28.1 ± 4.8, appraisal 34.2 ± 5.0, application 22.5 ± 2.9, and total score was 106.6 ± 14.01. We found that 49% of the variance related to the HLS score was associated with using the drugs recommended by the physician regularly (beta = −1.665, $P < 0.05$) and knowing the foods that should not be consumed with the drugs (beta = −4.024, $P < 0.05$).

Conclusions: The health literacy levels of pregnant women were found to be relatively adequate. The increase in the level of health literacy of pregnant women affects their drug use behavior positively. Therefore, planning for the improvement of pregnant women's health literacy is recommended.

Keywords: Drug, Health literacy, Pregnancy, Women

Address for correspondence: Dr. Yilda Arzu Aba, Department of Nursing, Faculty of Health Sciences, Bandırma Onyedi Eylul University, Kurtulus Cad. No: 98, Bandirma/Balikesir, Turkey.
E-mail: yildaarzum@hotmail.com
Received: 22 May 2021; **Revised:** 12 April 2022; **Accepted:** 16 April 2022; **Published:** 10 June 2022

Access this article online	
Quick Response Code:	Website: www.jnmsjournal.org
	DOI: 10.4103/jnms.jnms_79_21

How to cite this article: Aba YA, Basak T, Sevimli S. The relationship between health literacy and patterns of drug use in pregnancy. J Nurs Midwifery Sci 2022;9:116-23.

INTRODUCTION

According to the UNESCO's definition (2014), literacy is the ability to identify, understand, interpret, combine, communicate, and calculate by using the various types of written sources and records.[1] According to the definition in the American Medical Institute's report, health literacy is "the level of the capacity to acquire, understand, and perceive health information and services necessary to make appropriate individual decisions about health."[2] The criteria used to evaluate health literacy are being able to read the prescription written by the doctor, to know the date of the next follow-up, and to read written material such as forms. Individuals are expected to have access to information, make sense of it, use it, and protect and improve their health thanks to health literacy.[2] While the adult literacy rate has increased in the past decade, women make up 64% of nonliterate adults.[1] Studies have revealed various relationships between health literacy and the health-related behaviors and outcomes.[3] Adequate health literacy is a must for strengthening the possibility of changing the individual's behavior and lifestyle, providing access to health systems, and improving health.[4] The World Health Organization (WHO) has emphasized that health literacy should be seen as an integral part of protective and primary health-care services to the community.[5]

Drug use during pregnancy is an important issue that is frequently encountered and difficult to decide on as it is closely related to the health of both the mother and the fetus. The use of drugs is very important for women with certain chronic medical conditions such as epilepsy, diabetes, inflammatory bowel disease, and asthma. The benefits provided by the drug for the mother and the fetus may outweigh the teratogenic risk.[6] However, approximately 1% of all birth anomalies are caused by maternal drug use.[7] Pregnant women have also been shown to perceive the teratogenic risks of drug use unrealistically.[7]

According to the results of the Turkey Demographic and Health Survey (2013), 23.7% of pregnancies are unplanned and unwanted.[8] This indicates the possibility of women using prescribed or over-the-counter drugs for various reasons without realizing they are pregnant.[6,9] Based on the results of two systematic reviews, drug use is common in pregnancy and this rate has been reported as between 27% and 93% in developing countries.[10,11] Of the pregnant women, 32.6% were found to have used drugs in the month before pregnancy, 15.0% at the time they found out that they were pregnant, 50.1% during the period the survey was implemented, and 80.5% during the first trimester in a survey study conducted with 359 pregnant women in Turkey.[12] In addition, the percentage of the use of drugs in categories D and X in these four groups was 14%, 13.5%, 2.9%, and 5.9%, respectively.[12] Similarly, another study in Japan found the ratio of pregnant women using one or more drugs to be 78.4% before learning they were pregnant, 57.1% from the time they learned of the pregnancy until the 12th week, and 68.8% after the 12th week.[13] Other studies have shown that the rate of over-the-counter drug use is higher than that of prescribed ones.[12,14]

One of the variables affecting drug use is health literacy.[15] Pregnant women with sufficient health literacy are thought to be able to pay more attention to the principles of drug use. Inadequacy in understanding the drug label/prescription information and drug administration mistakes is reported to be more common in individuals with a low health literacy level.[15] A multinational study found that negative beliefs about drugs were more common in pregnant women with low health literacy.[16] The same study recommended that clinicians consider the burden of low health literacy in certain health behaviors, such as medication use during pregnancy and nonadherence to treatment.[16] A systematic review showed that low health literacy in pregnant women is associated with negative beliefs about drugs and noncompliance with prescription drugs.[17] In a systematic review examining how pregnant women make decisions regarding drug use, it was shown that concerns about the baby's health and future pregnancy are important both during pregnancy and after delivery in the decision-making process.[18] Pregnant women's beliefs and fears about the safety of drugs have an impact on their adherence to medication.[19] Furthermore, an online survey showed that pregnant women regularly use the Internet to access drug information, and the reason for this is to ensure the safety of their babies.[19] The ability of the pregnant women to provide, understand, and use basic health-related information and to make appropriate health decisions for herself and the fetus is affected by the level of health literacy.[20] It is recommended to meet the information needs of pregnant women to increase health literacy in pregnant women.[21] Studies examining the relationship between health literacy and drug use pattern during pregnancy are limited in Turkey. Since social and cultural differences between populations may be affected the results, this study was conducted to identify the relationship between the health literacy level and drug use in pregnant women in Turkey.

MATERIALS AND METHODS

Study design and sample

This was a descriptive, cross-sectional study. The population of this study consisted of pregnant women who presented to

Uşak Training and Research Hospital's outpatient department in Turkey. No sample calculation was made and 469 pregnant women who accepted to participate in the study between January 10, 2017, and June 30, 2017 were included with the simple random sampling. Because we did not initially calculate the sample size, at the end of the study, we calculated the power of our sample size. For the sample of 441 people, the Health Literacy Scale (HLS) had a 95% confidence interval, an effect size of 1.55, and a power of 0.89.

Pregnant women who were able to speak Turkish were literate and volunteered to participate in the study were included. Pregnant women with communication problems were excluded from the study.

The specific study questions were as follows:

1. What is the health literacy level of pregnant women?
2. Is there a relationship between health literacy and patterns of drug use in pregnancy?

Data collection

The data were obtained using the sociodemographic data form and HLS. The demographic information form created by the researchers included 30 questions on the sociodemographic characteristics and drug use behavior of pregnant women. The original of the "HLS" was developed by Tobi, Bruzari, and Sorenson and the Turkish validity (content validity) and reliability (test-retest, $r = 0.74$) study was conducted by Aras and Temel in 2015.[22,23] The Cronbach's alpha value was found to be 0.92.[23] The scale containing 25 items consists of four subscales that include the access (5 minimum-25 maximum. score), understanding (7 minimum-35 maximum. score), appraisal (8 minimum-40 maximum score), and application (5 minimum-25 maximum score) participants. The minimum scale score is 25 points and the maximum 125 points; a higher score indicates a higher health literacy level of the individual. The scale items are answered by the participants in a Likert structure as "5: I have no difficulty, 4: I have little difficulty, 3: I have some difficulty, 2: I have a lot of difficulty, 1: I cannot do it/I have no talent/impossible."[22,23] The Cronbach's alpha value was found to be 0.92 in our study.

The data of the study were collected by the investigators using the face-to-face interview technique from the pregnant women at the pregnancy outpatient department at an appropriate time.

Ethical considerations

Written permission was obtained from the Uşak University Interventional Research Ethics Committee (09.01.2017/2017-02) and the Uşak Training and Research Hospital, where the study will be conducted. The study protocol was designed in compliance with the principles of the Declaration of Helsinki. In addition, the verbal and written informed consent of pregnant women included in the study was obtained after they were informed of the purpose and method of the research.

Statistical analysis

The data obtained were evaluated in a computer environment using the SPSS software version 15.0 (SPSS Inc., Chicago, IL) program. Mean values, standard deviations, numbers, and percentages were used in the identification of the data. The compliance of the data with a normal distribution was evaluated with the Kolmogorov–Smirnov test. The *t*-test, Mann–Whitney *U*-test, Kruskal–Wallis test (KW), ANOVA test, Bonferroni-corrected Mann–Whitney *U*-test, and multiple regression analysis were used in the analysis of the data. During the statistical analyses, the *P* value was accepted as significant if under 0.05.

RESULTS

Four hundred and sixty-nine pregnant women participated in this study. However, 28 pregnant women were excluded from the study due to the lack of data and the study was completed with 441 pregnant women.

Sociodemographic characteristics and mean health literacy scores are presented in Table 1. A statistically significant relationship was found between the HLS scores and the educational status, occupational status, the pregnancy being planned, and the number of previous pregnancies ($P < 0.01$) but not between the HLS scores and the age groups and gestational week ($P > 0.05$).

Table 2 shows using drugs for chronic disorders. The mean HLS score was 107.2 ± 14.9 in pregnant women who used their drugs regularly and 105.0 ± 12.9 in those who did not, with a statistically significant difference ($Z = -2.19$, $P < 0.05$).

The women's drug use behavior during pregnancy is shown in Table 3. The mean HLS was 108.2 ± 13.1 in those who checked the expiration date of the drugs, 99.7 ± 14.6 in those who sometimes checked it, and 97.1 ± 17.1 in those who never did so. The difference between these groups was statistically significant (KW = 26.92, $P < 0.01$). This difference was found to originate from women who checked and did not check the expiration date in the advanced statistical analysis performed.

The mean HLS score was 108.1 ± 13.5 in pregnant women who always paid attention to the storage conditions of the drugs, 100.7 ± 12.4 in those who sometimes did so,

Table 1: Comparison of health literacy score based on the sociodemographic characteristics and health literacy states in pregnant women (*n*=441)

Sociodemographic characteristics	*n* (%)	HLS (mean±SD)	Test (*P*)
Age (years)			
≥18	22 (5.0)	105.2±16.8	7.07[a](0.07)
19–25	210 (47.6)	107.0±12.4	
26–35	182 (41.3)	107.7±13.7	
≤36	27 (6.1)	97.2±20.6	
Educational status			
Illiterate	11 (2.5)	84.0±23.7	12.46[b](<0.01)
Primary education	92 (20.9)	105.7±15.4	
Secondary education	131 (29.7)	104.8±12.2	
High school	135 (30.6)	107.5±12.5	
University and above	72 (16.3)	112.6±11.6	
Having an occupation			
Yes	76 (17.2)	110.6±11.5	−2.77[c](<0.01)
No	365 (82.8)	105.8±14.3	
Income status			
Less than expenses	63 (14.3)	104.3±9.4	2.48[b](0.08)
Equal to expenses	317 (71.9)	107.5±14.2	
More than expenses	61 (13.8)	104.1±16.1	
Planned pregnancy			
Yes	311 (75.1)	107.3±13.3	6.35[d](<0.01)
No	110 (24.9)	104.4±15.7	
Number of previous pregnancies			
0	3 (0.7)	95.0±16.5	24.54[a](<0.01)
1	184 (41.7)	110.0±12.2	
2	123 (27.9)	105.3±14.1	
3	85 (19.3)	105.4±13.9	
≤4	46 (10.4)	106.2±14.9	
Gestational trimester			
First trimester	36 (8.2)	106.0±11.1	1.31[a](0.51)
Second trimester	98 (22.2)	105.9±13.7	
Third trimester	307 (69.6)	106.9±14.4	

[a]Kruskal–Wallis test, [b]ANOVA test, [c]Mann–Whitney *U*-test, [d]*t*-test.
HLS: Health Literacy Scale, SD: Standard deviation

and 99.6 ± 18.2 in those who did not pay attention to these conditions, with a statistically significant difference between the groups (KW = 26.20, $P < 0.01$). The mean HLS was 106.9 ± 14.0 in pregnant women who informed the physician regarding their drug/food allergy state and 100.7 ± 9.9 in those who did not, and the difference was found to be statistically significant (KW = 7.27, $P < 0.05$).

The mean HLS score was 109.7 ± 13.8 in the pregnant women who knew the foods that should not be consumed with their medication and 102.6 ± 13.2 in those who did not, again with a statistically significant difference ($Z = -2.62$, $P < 0.01$). Similarly, the mean HLS score was 108.4 ± 15.1 in the pregnant women who knew the herbal products that should not be consumed with their medication and 105.3 ± 12.6 in those who did not, with a statistically significant difference ($F = 5.68$, $P < 0.01$).

We found that 49% of the variance related to the HLS score in pregnant women was associated with using the drugs recommended by the physician regularly [Table 4].

Table 2: Prevalence of using drugs in pregnancy and mother's perception about it (*n*=441)

State of using drugs	*n* (%)
Using drugs continuously in pregnancy due to a chronic disease	
Yes	89 (20.2)
No	352 (79.8)
The type of used common drugs in pregnancy*	
Vitamins/minerals	406 (92.1)
Vomiting-nausea drugs	48 (10.9)
Painkiller	36 (8.2)
Antibiotic	9 (2.0)
Cold/flu	6 (1.4)
Allergy	5 (1.1)
Antacid	4 (0.9)
Bowel regulator	6 (1.4)
Other (thyroid, diabetes, asthma, hypertension, etc.)	92 (20.86)
Folic acid use before pregnancy and in the first trimester	
Yes	279 (63.4)
No	162 (34.6)
Using drugs before being aware of the pregnancy	
Yes	75 (17.0)
No	366 (83.0)
Mother's perceptions of using drugs in pregnancy	
Drug use in pregnancy is always dangerous	69 (15.7)
Drugs can be used when necessary in pregnancy	110 (24.9)
Drug use in pregnancy is always safe	9 (2.0)
It is always safe after the first 3 months of pregnancy	2 (0.5)
Drug use in pregnancy is always safe as long as it is under a physician's control	251 (56.9)
Drug use without the recommendation of a physician during pregnancy	
Yes	18 (4.1)
No	422 (95.9)
Resources of information on drug use	
Physician	193 (43.8)
Pharmacist	31 (7.0)
Nurse/midwife	14 (3.2)
Drug leaflet	191 (43.3)
Internet	12 (2.7)
The reason for not using the drugs recommended by the physician in pregnancy regularly (*n*=124)	
Side effects	15 (12.1)
Forgetting	41 (33.1)
Not effective	6 (4.8)
Expensive drug	15 (12.1)
Finding drug use risky	13 (10.5)
Other	34 (27.4)
Knowing the foods that should not be consumed with the drugs used	
Yes	249 (56.5)
No	192 (43.5)
Knowing the herbal products that should not be consumed with the drugs used	
Yes	179 (40.7)
No	262 (59.3)

**n* is multiplied

DISCUSSION

Although health literacy in the gestational period is a very important issue in terms of both maternal and fetal health, the literature on the subject is limited.[24] This study was conducted to identify the relationship between the health literacy level and drug use in pregnant women.

Table 3: Drug using behaviors of pregnant Turkish women, (*n*=441)

Drug using behaviors	*n* (%)
Regularly using the drugs recommended by the physicians in pregnancy	
Yes	317 (71.9)
No	24 (5.4)
Sometimes	100 (22.7)
Behavior in case of feeling discomfort in pregnancy	
Consulting the physician	405 (91.8)
Consulting the pharmacist	11 (2.5)
Consulting other health-care staff	11 (2.5)
Trying herbal treatment methods	6 (1.5)
Using drugs available at home	4 (0.9)
Other	3 (0.8)
Informing the physician about the drugs used previously	
Yes	406 (92.1)
No	35 (7.9)
The duration of using physician-recommended drugs	
Until it is finished	136 (31.0)
Until the symptoms disappear	78 (17.8)
Throughout the period recommended by the physician	223 (50.7)
Other	2 (0.5)
Checking the expiration date before using drugs	
Yes	369 (83.7)
No	23 (5.2)
Sometimes	49 (11.1)
Paying attention to the storage conditions of drugs	
Yes	352 (79.8)
No	24 (5.4)
Sometimes	65 (14.8)
Informing the physician of drug/food allergies	
Yes	416 (94.3)
No	4 (0.9)
If the physician asks about it	21 (4.8)
Checking whether the drug was in the prescription when obtaining drugs	
Yes	342 (77.6)
No	99 (22.4)

Table 4: Multiple regression analysis of variables related to the Health Literacy Scale score of pregnant women (Variance: 49%)

Variables	*B*	SE	Beta (β)	*t*	*P*
Constant	114,886	1848		62,174	<0.001
Regularly using the drugs recommended by the physician in pregnancy	−1665	0.851	−0.092	−1957	0.05
Knowing the foods that should not be consumed with the drugs used	−4024	0.925	−0.204	−4351	<0.001

Dependent variable: HLS score: *R*: 0.231, Adjusted R^2: 0.049, *F*: 12.256, *P*: 0.000, Durbin Watson: 1.831. HLS: Health Literacy Scale, SE: Standard error

The health literacy levels of pregnant women were found to be relatively adequate in our study. The health literacy category was "inadequate" (24.5%) or "problematic" (40.1%) in 64.6% of Turkey's adult population in a health literacy study (2014) conducted on adults in Turkey.[25] In the study conducted in Turkey, it was determined that the health literacy levels of pregnant women were high.[26] In a systematic review study, it was noted that the levels of health literacy in pregnant women differed.[17] The reason for the high average health literacy levels of pregnant women in our study in contrast to the general population study could be the implementation of the continuing "Safe Motherhood" training and consultancy program launched in Turkey in 2004. This health-care education and counseling program offered to women during their pregnancy and the puerperium is thought to contribute to the increase of health literacy. Furthermore, the fact that too many tools have been developed for health literacy measurements limits the international comparability of the results.

In our study, it was found that the education level, occupational status, planned pregnancy, and the number of previous pregnancies affected the health literacy levels of pregnant women. Health literacy has been reported to be related to demographic and socioeconomic factors such as old age, education level, and poverty in the Institute of Medicine report.[27] The health literacy level of individuals with a high educational level was found to be higher in the Turkey Health Literacy study.[25] Health literacy was also found to be higher in young people without financial difficulties, those with higher education levels, and females in the European Union study.[28] In the literature, it is reported that individuals evaluate their health better as their education level increases.[29] In addition, there are different studies reporting that the level of health literacy increases as the education level increases in pregnant women.[21,26,30] In a study conducted in Iran, they reported that as the education and income levels of pregnant women increased, their health literacy levels also increased.[31] These results draw attention to the need to take measures to increase the level of health literacy so that pregnant women with low education and income levels can take the right decisions about their health.

The pregnancy was found to be unplanned in about 25% of the pregnant women in our study. It is reported that unplanned pregnancies may play a role in negative health behaviors such as smoking in pregnancy, inadequate vitamin usage, and smaller weight increase than recommended or no weight increase.[32-34]

Health literacy levels of the pregnant women who had experienced at least one pregnancy were found to be high in our study. Similarly, in a multicenter study, it was reported that the health literacy levels of pregnant women without living children were lower.[16] The high health literacy level of women with a previous pregnancy was evaluated as an expected result as the woman benefits from health-care services the most and also receives the services of the "Safe Motherhood" education and counseling program in Turkey during this period. Effective prenatal care has been

reported to be an important and effective tool in ensuring maternal health literacy.[31,34]

In this study, 92.1% were receiving vitamin/mineral support in pregnancy. Only 63.4% had used folic acid before the pregnancy and during the first trimester. Similarly, the rate of drug use for chronic diseases is 26% of all pregnancies in the literature.[41] The first study on drug use during pregnancy was conducted in 1990 and it was found that the rates of drug use containing vitamins and minerals varied between 82% and 100%.[9] Significant international differences have been found in the rates of general drug use in pregnancy.[11] Drug use in pregnancy except for vitamins and minerals in the Organization for Economic Co-operation and Development (OECD) countries has been shown to be lowest in Northern European countries and highest in France (93%) and Germany (85%).[11] The drug use rate in any period of pregnancy was found to be 88.8% in a US study.[35] Although differences between the study methods makes comparing the results of drug use studies difficultIn a study conducted in Italy, similar to our study, it was reported that the majority of women used folic acid/iron preparations.[36] In a study conducted in Saudi Arabia, it was stated that the most frequently used drugs by pregnant women were vitamins, paracetamol, herbal products and antiemetics.[37] In a study conducted in Pakistan, It has been reported that drug use is common during pregnancy, and among the most commonly prescribed drugs are iron preparations-vitamin and mineral supplements (79.4%), followed by analgesics (6.2%) and anti-bacterials (2.2%).[38] The rate of folic acid use before the pregnancy and in the first trimester was 63.4% in our study. The rate of folic acid use in the first trimester was found to be 65.2% in a study conducted in China.[39] The rate of folic acid use was 26.9% before pregnancy and 94.6% during pregnancy in a study conducted in Lebanon.[40] These differences in studies can be associated with differences in health care delivery. The data obtained both in our study and in other studies revealed that pregnant women need more detailed information about increasing their folic acid intake in the prenatal period and in the first trimester of pregnancy.

In a study on drug compliance among pregnant women using drugs for chronic diseases, it was found that most pregnant women had low drug compliance, and the main factor affecting drug compliance was women's beliefs about drug use.[41] When the perceptions of the pregnant women regarding the risks of drug use were evaluated in our study, some of pregnant women stated that drug use was always safe as long as it was under the physician's control and others felt they could be used if required during pregnancy. However, although the majority of pregnant women had positive thoughts regarding drug use in pregnancy, the rate of regular drug use was found to be 71.9%. Low health literacy in pregnancy to be associated with drug non-adherence in another study.[16] The health literacy level of the patients who were using their medication regularly was higher in our study. Similar to our study, in a limited number of studies, it was reported that 75% and 89.1% of pregnant women did not go beyond the dose and duration of use in drug use during pregnancy.[42,43] pregnant women with a chronic disease may use their regular medication unintentionally during the first months of pregnancy. This particular ratio was 17% in our study. Although other studies differ according to countries, these rates were found to be between 8.4% and 72.4%.[44-46] Effective communication methods should be used with pregnant women who feel anxiety regarding their drug use without being aware of their pregnancy. It has been reported that providing adequate counseling on teratogenic risks to pregnant women will improve their medication adherence during pregnancy.[47]

The most important factor affecting the success of medical treatment is the correct and regular use of drugs. The health literacy level was higher in pregnant women who checked the expiration date of drugs, paid attention to the storage conditions of drugs, and knew the foods and herbal products that should not be consumed together with their drugs in our study. A study determined the relationship of health literacy with drug use habits and correct drug use for the first time. A strong relationship was shown between an inadequate health literacy level and misuse of the measured dose inhaler asthma drugs.[48] In a study, it was reported that individuals with low health literacy do not use their medicines properly and cannot understand the messages about health well.[49]

The single-center nature of our study limits the generalization of the results. The presence of several scales developed for the evaluation of health literacy has limited comparison with the results of other studies.

CONCLUSIONS

The results of this study are important as it is the first study on the subject from our country. The development of health literacy is an important issue for Turkey's health policies. The health literacy level of pregnant women with a high level of education, who are currently employed, have a planned pregnancy and have experience of at least one previous pregnancy was found to be higher in our study. Besides, pregnant women with a high health literacy level were found to show positive drug use behavior.

Conflicts of interest

There are no conflicts of interest.

Author contributions

All authors took part in the design of the study and were responsible for the supervision of data collection as well as the analysis of data.

Financial support and sponsorship

Nil.

REFERENCES

1. United Nations Educational, Scientific and Cultural Organization (UNESCO). Teaching and Learning: Achieving Quality for All. EFA Global Monitoring Report First Edition; 2014. Available from: http://www.unesco.org/new/en/education/themes/leading-the-internationalagenda/efareport/. [Last accessed on 2017 Sep 17].
2. Nutbeam D. Health literacy as a public health goal: A challenge for contemporary health education and communication strategies into the 21st century. Health Promot Int 2000;15:259-67.
3. Dewalt DA, Berkman ND, Sheridan S, Lohr KN, Pignone MP. Literacy and health outcomes: A systematic review of the literature. J Gen Intern Med 2004;19:1228-39.
4. Mancuso JM. Health literacy: A concept/dimensional analysis. Nurs Health Sci 2008;10:248-55.
5. World Health Organization (WHO). Health Literacy; 2013. Available from: http://www.euro.who.int/__data/assets/pdf_file/0008/190655/e96854.pdf. [Last accessed on 2017 Sep 24].
6. Bakker MK, Jentink J, Vroom F, Van Den Berg PB, De Walle HE, De Jong-Van Den Berg LT. Drug prescription patterns before, during and after pregnancy for chronic, occasional and pregnancy-related drugs in the Netherlands. BJOG 2006;113:559-68.
7. Widnes SF, Schjøtt J. Risk perception regarding drug use in pregnancy. Am J Obstet Gynecol 2017;216:375-8.
8. Turkey Demographic and Health Survey; 2013. Available from: http://www.hips.hacettepe.edu.tr/tnsa2013/rapor/TNSA_2013_ana_rapor.pdf. [Last accessed on 2017 Sep 14].
9. Bonati M, Bortolus R, Marchetti F, Romero M, Tognoni G. Drug use in pregnancy: An overview of epidemiological (drug utilization) studies. Eur J Clin Pharmacol 1990;38:325-8.
10. Benevent J, Araujo M, Hurault-Delarue C, Montastruc JL, Sommet A, Lacroix I, *et al*. Pharmacoepidemiology in pregnancy. Therapie 2019;74:289-300.
11. Daw JR, Hanley GE, Greyson DL, Morgan SG. Prescription drug use during pregnancy in developed countries: A systematic review. Pharmacoepidemiol Drug Saf 2011;20:895-902.
12. Basgül A, Akici A, Uzuner A, Kalaça S, Kavak ZN, Tural A, *et al*. Drug utilization and teratogenicity risk categories during pregnancy. Adv Ther 2007;24:68-80.
13. Nishigori H, Obara T, Nishigori T, Metoki H, Ishikuro M, Mizuno S, *et al*. Drug use before and during pregnancy in Japan: The Japan environment and children's study. Pharmacy (Basel) 2017;5:21.
14. Headley J, Northstone K, Simmons H, Golding J; The ALSPAC Study Team. Medication use during pregnancy: Data from the Avon Longitudinal Study of Parents and Children. Eur J Clin Pharmacol 2004;60:355-61.
15. Kripalani S, Henderson LE, Chiu EY, Robertson R, Kolm P, Jacobson TA. Predictors of medication self-management skill in a low-literacy population. J Gen Intern Med 2006;21:852-6.
16. Lupattelli A, Picinardi M, Einarson A, Nordeng H. Health literacy and its association with perception of teratogenic risks and health behavior during pregnancy. Patient Educ Couns 2014;96:171-8.
17. Nawabi F, Krebs F, Vennedey V, Shukri A, Lorenz L, Stock S. Health literacy in pregnant women: A systematic review. Int J Environ Res Public Health 2021;18:3847.
18. Koren G, Pariente G. Pregnancy- associated changes in pharmacokinetics and their clinical implications. Pharm Res 2018;35:61.
19. Sinclair M, Lagan BM, Dolk H, McCullough JE. An assessment of pregnant women's knowledge and use of the Internet for medication safety information and purchase. J Adv Nurs 2018;74:137-47.
20. Barnes LA, Barclay L, McCaffery K, Aslani P. Complementary medicine products: Information sources, perceived benefits and maternal health literacy. Women Birth 2018;32:493-520.
21. Dadipoor S, Ramezankhani A, Alavi A, Aghamolaei T, Safari-Moradabadi A. Pregnant women's health literacy in the south of Iran. J Family Reprod Health 2017;11:211-8.
22. Toci E, Burazeri G, Sorensen K, Jerliu N, Ramadani N, Roshi E, *et al*. Health literacy and socioeconomic characteristics among older people in transitional Kosovo. J Adv Med Med Res 2013;3:1646-58.
23. Aras Z, Temel AB. Evaluation of validity and reliability of the Turkish version of health literacy scale. Florence Nightingale J Nurs 2017;25:85-94.
24. Kohan S, Ghasemi S, Dodangesh M. Association between maternal health literacy and prenatal care and pregnancy outcome. Iranian J Nurs Midwifery Res 2007;12:146-52.
25. Durusu-Tanrıöver M, Yıldırım HH, Demiray-Ready FN, Çakır B, Akalın HE. Turkey Health Literacy Study. 1st ed. Ankara: Sağlık-Sen Publications; 2014.
26. Akça E, Gökyıldız Sürücü, Ş, Akbaş M. Health perception, health literacy and related factors in pregnant women. J Inonu Univ Health Serv Vocat Sch 2020;8:630-42.
27. Intitute of Medicine. Health Literacy: A Prescription to End Confusion. Washington DC: National Academies Press; 2004.
28. HLS-EU Consortium. Comparative Report of Health Literacy in Eight EU Member States. The European Health Literacy Survey HLS-EU; 2012. Available from: http://www.ec.europa.eu/chafea/documents/news/Comparative_report_on_health_literacy_in_eight_EU_member_states.pdf. [Last accessed on 2017 Sep 11].
29. Souto TS, Ramires A, Leite A, Santos V, Santo RE. Health perception: Validation of a scale for the Portuguese population. Trends Psychol 2018;26:2185-201.
30. Kaya Şenol D, Göl I, Aydın Özkan S. The effect of health literacy levels of pregnant women on receiving prenatal care: A cross-sectional descriptive study. Int J Caring Sci 2019;12:1717-24.
31. Charoghchian Khorasani E, Peyman N, Esmaily H. Measuring maternal health literacy in pregnant women referred to the healthcare centers of Mashhad, Iran, in 2015. J Midwifery Reprod Health 2018;6:1157-62.
32. Ersoy E, Karasu Y, Çelik EY, Ersoy AÖ, Tokmak A, Taşçı Y. Individual features and contraceptive attitudes of women who had unintended pregnancy. J Clin Exp Invest 2015;6:250-5.
33. Akyol A, Yağcı ŞG, Tekirdağ Aİ. The comparison of type and properties of delivery between health workers and non-health workers. İstanbul Kanuni Sultan Süleyman Medical Journal 2011;3:55-63.
34. Mojoyinola JK. Influence of maternal health literacy on healthy pregnancy and pregnancy outcomes of women attending public hospitals in Ibadan, Oyo State, Nigeria. Afr Res Rev 2011;5:28-39.
35. Mitchell AA, Gilboa SM, Werler MM, Kelley KE, Louik C, Hernández-Díaz S, *et al*. Medication use during pregnancy, with particular focus on prescription drugs: 1976-2008. Am J Obstet Gynecol 2011;205:51.
36. Pisa FE, Casetta A, Clagnan E, Michelesio E, Vecchi Brumatti L, Barbone F. Medication use during pregnancy, gestational age and date of delivery: Agreement between maternal self-reports and health database information in a cohort. BMC Pregnancy Childbirth 2015;15:310.
37. Zaki NM, Albarraq AA. Use, attitudes and knowledge of medications among pregnant women: A Saudi study. Saudi Pharm J 2014;22:419-28.
38. Rohra DK, Das N, Azam SI, Solangi NA, Memon Z, Shaikh AM, *et al*. Drug-prescribing patterns during pregnancy in the tertiary

care hospitals of Pakistan: A cross sectional study. BMC Pregnancy Childbirth 2008;8:24.
39. Zhu X, Qi X, Hao J, Huang Z, Zhang Z, Xing X, *et al*. Pattern of drug use during the first trimester among Chinese women: Data from a population-based cohort study. Eur J Clin Pharmacol 2010;66:511-8.
40. Aoun A, Faddoul L, El Jabbour F, El Osta N, Hlais S, El Osta L. Are the level of knowledge and practices of pregnant women regarding folic acid supplementation still inadequate? A cross-sectional study in a middle eastern urban setting. J Diet Suppl 2018;15:692-703.
41. Sawicki E, Stewart K, Wong S, Leung L, Paul E, George J. Medication use for chronic health conditions by pregnant women attending an Australian maternity hospital. Aust NZJ Obstet Gynaecol 2011;51:333-8.
42. Lupattelli A, Spigset O, Nordeng H. Adherence to medication for chronic disorders during pregnancy: Results from a multinational study, Int J Clin Pharm 2014;36:145-53.
43. Tamırcı M, Akıcı A, Aydın V, Sakarya S, Zafer Goren M. Evaluation of the knowledge, attitude, and behaviors of physicians and pharmacists regarding the use of medicines in pregnancy. J Res Pharm 2021;25:218-29.
44. Alptekin PÇ, Koruk F. Drug use habits and the effective factors of pregnant women in Sanliurfa. Harran Univ Med Fac J 2020;17:28-32.
45. Bercaw J, Maheshwari B, Sangi-Haghpeykar H. The use during pregnancy of prescription, over the counter and alternative medications among Hispanic women. Birth 2010;37:211-8.
46. Abduelkarem AR, Mustafa H. Use of over-the-counter medication among pregnant women in Sharjah, United Arab Emirates. J Pregnancy 2017;2017:4503793.
47. Abasiubong F, Bassey EA, Udobang JA, Akinbami OS, Udoh SB, Idung AU. Self-medication: Potential risks and hazards among pregnant women in Uyo, Nigeria. Pan Afr Med J 2012;13:15.
48. Williams MV, Baker DW, Parker RM, Nurss JR. Relationship of functional health literacy to patients' knowledge of their chronic disease. A study of patients with hypertension and diabetes. Arch Int Med 1998;158:166-72.
49. Berkman ND, Sheridan SL, Donahue KE, Halpern DJ, Crotty K. Low health literacy and health outcomes: An updated systematic review. Ann Intern Med 2011;155:97-107.