Self-medication and its related Factors in Pregnant Women: A Cross-sectional Study

Sedigheh Pakseresht (PhD)[1], Alaleh Khalili Sherehjini (MSc)[2*], Sedigheh Rezaei (PhD)[3], Ehsan Kazem Nezhad Leilie (PhD)[4]

[1] Professor, Social Determinants of Health Research Center, Reproductive Health Research Center, Guilan University of Medical Sciences, Rasht, Iran
[2] MSc Student in Midwifery, Department of midwifery, Faculty of Nursing and Midwifery, Guilan University of Medical Sciences, Rasht, Iran
[3] Lecturer, Department of midwifery, Faculty of nursing and midwifery, Guilan univercity of medical sciences, Rasht, Iran
[4] Associate Professor, Department of Biostatics, Faculty of nursing and midwifery, Guilan University of Medical Sciences, Rasht, Iran

ARTICLE INFO	ABSTRACT
	Background & aim: Self-medication as a global challenge for mother and baby is a potential threat and it is common not only in developing countries but also in developed countries. Various factors affect drug use. This study aimed to determine the rate of practicing self-medication and its related factors in pregnant women. ***Methods:*** This cross-sectional study was conducted on 598 pregnant women referring to Al-Zahra Teaching Hospital and comprehensive health centers located in Rasht, Iran. The subjects were selected using random sampling method. The data were collected by a self-structured questionnaire on self-medication and analyzed using chi square test, logistic regression. Furthermore, a logistic regression model was applied to determine the factors associated with the rate of self-medication. ***Results:*** Practice of self-medication during pregnancy was reported by 8.7% of the mothers. The most commonly used medications were analgesics (50.9%), herbal medicines (24.5%), and cold/ flu medications (17%). The most common causes of self-medication among mothers included availability of medications (67.9%), previous use (60.4%), and treatments (47.2%). The majority of participants had an arbitrary use due to headache (34%), common cold (22.6%), and digestive diseases (22.6%). Also, 86.1% of the mothers had a moderate level of awareness about self-medication, which had no significant relationship with self-medication (P=0.872). The spousal age (OR=0.931, 95% CI=0.87-0.98; P=0.02), gravidity (OR=1.34, 95% CI=1.03-1.74; P=0.028), comorbid diseases, (OR=2.36, 95% CI=1.29-4.32; P=0.005), and uncertainty about the effect of drugs (OR=0.189, 95% CI=0.04-0.805; P=0.024) were found to be the predictors of self-medication. ***Conclusion:*** As the findings indicated, the arbitrary use of medications during pregnancy increased with age and gravidity. Therefore, it is recommended that the Ministry of Health consider policies for the education and provision of the necessary information in this regard for the target population.

Introduction

Self-medication as a global challenge for mothers and neonates is a potential threat (1). Self-medication means the use of medicine by the patient based on non-specialist advice, instead of consulting a doctor (2). The use of all kinds of medications is accompanied by undesirable effects (3). Moreover, self-medication can result in bacterial resistance, impairment of optimal

* *Corresponding author:* Alaleh Khalili Sherehjini, MSc Student in Midwifery, Department of midwifery, Faculty of Nursing and Midwifery, Guilan University of Medical Sciences, Rasht, Iran. Tel: 00989157877212; Email: a.khalili.sh@gmail.com

treatment, unwanted poisoning, allergies, dangerous side effects, delay in the optimal management of medical conditions, and drug interactions (4).

Self-medication is affected by many factors, such as age, gender, income level, self-care tendency, level of education, medical knowledge, satisfaction, and perception of the disease (5). This practice is common not only in developing countries but also in developed countries. Self-medication has the prevalence rates of 42% and 47.9% in the United States (6) and China (7), respectively. This rate has been reported as 59%, 54%, 34%, and 26.2% in developing countries, such as Nepal, India, Mexico, and Ethiopia, respectively (5). Based on the evidence, the rate of the arbitrary use of medicines in the Iranian population is 53% (8). This rate has been reported as 53.4% among the women living in this country (4). In addition, the European women and Spain reportedly have a self-medication rate of 16.9% (9). Self-medication in Iran is roughly three times higher than its average in the world, and its prevalence varies from 12% to 90% (10-14).

Since women are particularly prone to the arbitrary use of drugs, focusing on female populations is important because they not only experience sensitive periods in life (e.g., pregnancy and lactation) but also interact with other family members (6). Women repeatedly use self-medication to manage their own problems, such as dysmenorrhea, menopause symptoms, menstrual disorders, mood disorders, pregnancy, and lactation. In addition, self-medication has a high rate in women with an unwanted pregnancy who are unaware of their pregnancy (15), and this can lead to over 3% congenital abnormalities (16). Regarding this, the investigation of this issue among the female population is a matter of paramount importance (6).

There is a clear statistical difference among countries, or even in one country, regarding the amount of medication use in pregnant women. The rates of self-medication among pregnant women in France, Italy, Russia, and the United States have been reported as 72.1%, 70%, 81.3%, and 84.5%, respectively (17, 18). This rate in the pregnant women living in Iran is estimated at 32% (16).

Today, the use of herbal medicines for the treatment of diseases is on an increasing trend (19). The majority of pregnant women believe that the use of herbal medicines during pregnancy and after delivery does not lead to maternal and fetal complications. However, in a study performed by Lange (20), no difference was reported between the herbal and chemical drugs in terms of inducing fetal malformation. On the other hand, in another study, the use of herbal medicines was observed to increase the likelihood of preterm delivery by 2-3 times. In addition, these kinds of medicines were reported to cause abortion or fetal abnormalities (21).

Demographic, epidemiological, and cultural factors affect the rate of medication use. Factors that lead to self-medication in pregnant women include the lack of knowledge about the disease, lack of appropriate health insurance, and high cost of health care. Moreover, maternal age and education, number of children, and place of residence are among the other factors influencing the practice of self-medication in pregnant women (2, 5, 13).

There are contradictory results on the prevalence of self-medication and its related factors. Regarding this, the present study aimed to determine the frequency of self-medication and its related factors in pregnant mothers, in Rasht, Iran. Identification of the factors associated with self-medication can provide valuable information for health planners and healthcare providers, including midwives, to design appropriate interventions in order to increase women's awareness regarding self-medication, prevent adverse pregnancy outcomes, and promote maternal and neonatal health.

Materials and Methods

The present cross-sectional study was conducted on 598 pregnant women who were admitted to the Al-Zahra Teaching Hospital (including postpartum and prenatal departments) and 41 comprehensive health centers (CHCs) in Rasht, Iran, in 2018. The sample size was calculated at 598 cases with a confidence level of 95% and an estimated error limit of 5% using the sampling formula and based on the results of a study performed by Cabut (17) reporting a self-medication prevalence of 72% (17). The number of

pregnant mothers referring to Al-Zahra Hospital and CHC during one month was recorded as 2,589 and 1,510, respectively. According to the sample size formula, the numbers of the samples needed to be selected from the hospital and CHCs were 378 and 220, respectively. The random sampling method was used, and the data were collected by questionnaires and interviews.

The inclusion criteria were: 1) 12-42 weeks of pregnancy and postpartum period (the first 24 h), 2) lack of any recorded diseases (e.g., depression and chronic illnesses; based on patient's claim) necessitating regular drug use, 3) lack of employment or education in medical fields, and 4) completion of the questionnaires at one of the settings (i.e., hospital or CHCs). On the other hand, those who were unwilling to continue participating in the study during the completion of the questionnaire were excluded from the study.

The instruments used in this study were a researcher-made questionnaire designed based on scientific resources, related texts, and library studies. The content validity method was used to assess the questionnaire. To this end, the questionnaires were provided for 12 faculty members of nursing and midwifery and counseling supervisors. After the collection of the suggestions and implementation of necessary amendments, the final questionnaire was made.

The final questionnaire consisted of three parts. Part I was composed of five subdomains, which included 31 items. The five subdomains included: 1) demographic characteristics (9 items; age, education level, maternal occupation, and spousal occupation, economic status, housing status, and health insurance status), 2) history of fertility (6 items; gravidity, parity, number of children, abortion, preterm delivery, and unwanted pregnancy), 3) medical history (7 items; heart disease, asthma, renal disease, blood pressure, diabetes, thyroid problems, and anemia), 4) resources of information regarding the correct use of medication (7 items; physician, neighbor, family and acquaintances, other patients, radio and television, books, brochures, and the Internet), and 5) factors preventing from the arbitrary use of medication (3 items; fear of the side effects of medicine,

uncertainty about the drug impact, influence of family and surrounding people [e.g., mother, father, sister, brother, and wife]). These data were reported descriptively and quantitatively. The medications considered in this study were other than those used during pregnancy, such as folic acid, iron, vitamins, and minerals prescribed by the physician.

Part II of the questionnaire was related to self-medication use, including the types of drugs (15 items), comorbid diseases (15 items), and causes of self-medication (26 items). These data have been reported descriptively and by percentage. In addition, part III dealt with items related to knowledge, consisting of 8 multiple-choice items, with the correct, undetermined, and incorrect answers being scored as 2, 1, and 0, respectively. The minimum and maximum scores of this tool are 0 and 16, respectively. Based on quartile deviation, the scores of ≤ 8 (earning at least 50% of the score), 9-12 (earning between 50% and 75% of the score), and 12-16 (over 75% of the score)

In this study, the developed instruments were submitted to academic members for validity evaluation. In this regard, the content validity of the demographic part was determined qualitatively. In addition, the validity of the part related to awareness was evaluated quantitatively using content validity ratio (CVR) and content validity index (CVI). The items with a CVI of > 0.56 (based on Lawshe Table) were maintained (22). The results showed that all instrument items had a high CVI (0.9-1) in terms of simplicity, clarity, and relevance to the study objectives; therefore, they were recognized appropriately.

Since the level of awareness at different times can be changed, parallel forms reliability was estimated. The internal consistency of the items was also calculated using Cronbach's alpha. In addition, parallel forms reliability and Pearson correlation coefficient were used to measure repeatability. The reliability coefficient of the two forms of the questionnaire was obtained as 97.3%. The results of the Pearson correlation coefficient revealed a significant correlation between the two forms ($r=0.852$; $P=0.002$). To determine the internal consistency of the items, the Richardson coefficient was used ($r=0.807$). Therefore, the instrument was found

to be reliable for measuring awareness about self-medication.

The researcher informed the participants about the study objectives and voluntariness of participation. In addition, the subjects were ensured about the confidentiality of their information and completed a written consent. All questionnaires were completed by the researcher in the form of an interview over 15-20 min on working days from 8 am to 2 pm during a period of 3 months (i.e., May to July) in 2018.

The data were analyzed using descriptive (mean and standard deviation) and inferential (Chi-square test and t-test) methods. In addition, a logistic regression model was used to determine the factors related to self-medication. All data analyses were performed in SPSS software (version 16) at a significant level of < 0.05. All variables with a p-value of < 0.25 in the single variable analysis were entered into the primary logistic model. The research project was approved by the Social Determinants of Health Research Center and the Ethics Committee of the University with the code of IR.GUMS.REC.1396.538.

Results

According to the data, the majority of the participants (59.7%) were within the age group of 26-35 years with the mean age of 29.65±5.84 years.

Table 1. Sciodemographic and fertility characteristics of pregnant women

Variables	N (%)
Age of mother (years)	
16-25	146 (24.4)
26-35	357 (59.7)
36-45	92 15.4 ()
>46	3 (0.5)
Education level	
Reading & Writing	224 (37.5)
Diploma & Higher	374 (62.5)
Occupation	
Employee	40 (6.7)
Self-business	35 (5.8)
Housewives	523 (87.5)

Spousal age (years)	
20-30	207 (34.6)
31-40	331 (55.4)
41-50	56 (9.4)
>51	4 (0.6)
Monthly income	
<300 $	165 (27.6)
300-600$	406 (67.9)
>600$	27 (4.5)
Residence status	
Rent	257 (43)
Owner	305 (51)
With family	36 (6)
Number of pregnancies	
1-2	453 (75.8)
3-4	132 (22)
>5	13 (2.2)
Parity	
0	105 (17.6)
1-2	462 (77.3)
3-4	31 (5.1)
Type of pregnancy	
Planned	482 (80.6)
Unplanned	116 (19.4)
Information sources regarding the correct use of medication	
Physician	429 (71.7)
Family	6 (1)
Neighbor	1 (0.2)
Radio-TV	1 (0.2)
Book- pamphlet	13 (2.2)
Internet	25 (4.1)
More than 1 item	123 (20.6)
Influential self-medication factors	
Fear of medication side effects	499 (83.4)
Uncertainty about drug effectiveness	74 (12.4)
Influenced by the family	25 (4.2)

With regard to the education level, 62.5% of them had diploma and higher education. Table 1 presents the demographic characteristics of the study population.

According to the results, 8.7% of the mothers

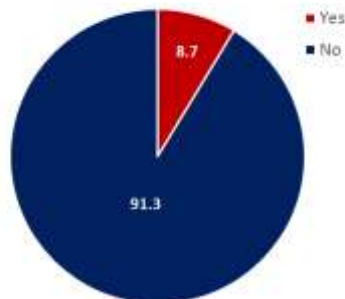practiced self-medication during pregnancy (Figure 1).

Figure 1. Rate of practicing self-medication among pregnant women

The most commonly used drugs were analgesics (50.9%), herbal medicines (24.5%), and cold and flu medications (17%), as depicted in Figure 2.
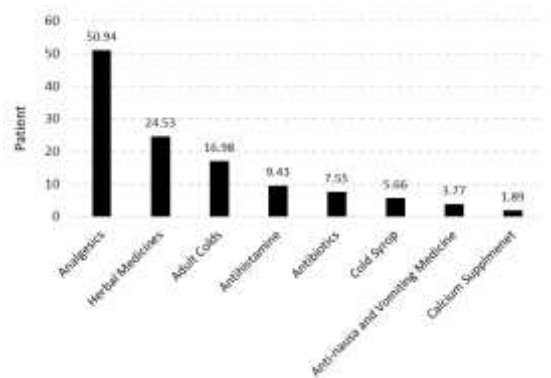

Figure 2. Rate of self-medicated drugs

According to the results, the most common causes of self-medication in mothers were the availability of medications (67.9%), previous use of medication (60.4%), and achievement of satisfactory results from previous treatments (47.2%). Furthermore, most of the participants used self-medication due to headache (34%), common cold (22.6%), and digestive diseases (22.6%). With regard to maternal awareness, 86.1%, 7.2%, and 6.7% of the mothers had moderate, good, and poor levels of awareness, respectively. The level of awareness was not significantly different between mothers with and without self-medication (P=0.872; Figure3).
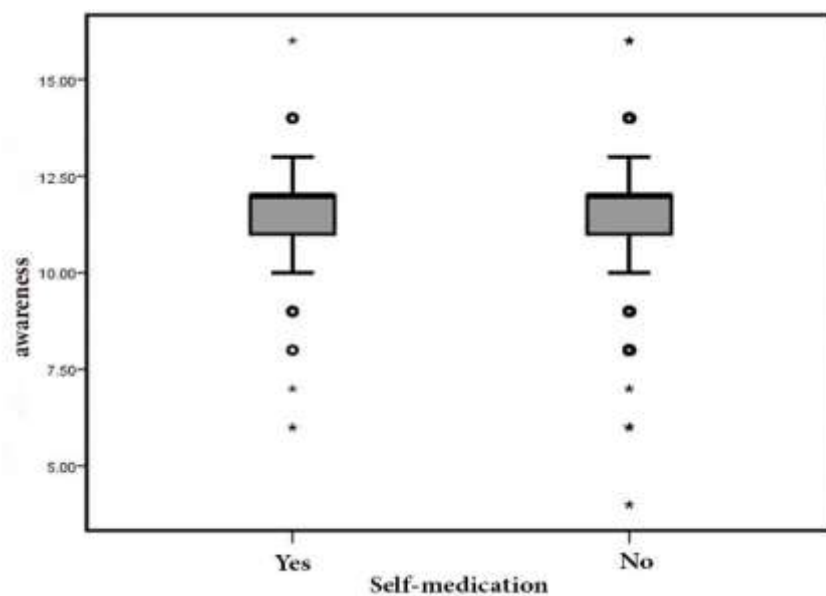

Figure 3: Comparison of self-medication among pregnant women in terms of awarenes

Based on the results of the Chi-square test, self-medication was not significantly different based on age (P=0.59), education level (P=0.75), occupation (P=0.28), spousal occupation (P=0.47), spousal education (P=0.26), place of residence (P=0.37), monthly income (P=0.11), and health insurance (P=0.59). In addition, self-medication was not significantly different (but borderline) in terms of gravidity (P=0.068), parity (P=0.061), and unwanted pregnancy (P=0.07).

Table 2. Factors related to self-medication based on regression logistic model

Variable	B	SD	Sig	OR	95% CI	
					Lower	Upper
Gravidity	0.293	0.134	0.028	1.340	1.032	1.741
Spousal age	-0.71	0.031	0.020	0.931	0.877	0.989
Economic status	0.541	0.304	0.075	1.717	0.947	3.116
Influential self-medication factors			0.71			
Fear of medication side effects	-1.006	0.543	0.64	0.366	0.126	1.061
Uncertainty about drug effectiveness	-1.664	0.738	0.024	0.189	0.045	0.805
Influenced by the family	–	Referral group		1		
Medical history	0.861	0.308	0.005	2.367	1.294	4.328
Constant	-0.872	1.106	0.430	0.418		

In multiple analysis, the demographic and fertility factors associated with self-medication were determined using the backward regression model with the cutoff values of 0.05 and 0.1 for entering and leaving variables from the model, respectively. Therefore, in the initial model, all variables under study were entered into the model with a sufficient sample size. Monthly income (P=0.07) was borderline to significant; furthermore, the spousal age (P=0.02), gravidity (P=0.028), medical history (P=0.005), and uncertainty about medication effects (P=0.024) were identified as the predictors of practicing self-medication (Table 2).

The results showed that with the increase in the number of pregnancies (OR=1.34, 95% CI=1.03-1.74) and monthly income (OR=1.71, 95% CI=0.94-3.11), the chance of self-medication also increased. Furthermore, the mothers with a history of illness had a higher chance of using self-medication (OR=2.36, 95% CI=1.29-4.32) than those having no history of illness during pregnancy. Additionally, with the increase in spousal age (OR=0.931, 95% CI=0.87-0.98), the chance of self-medication decreased. Moreover, the mothers who were uncertain about the effect of self-medication had a lower chance of using self-medication, compared to the mothers who refrained from the arbitrary use of drugs owing to the effect of their family and friends (OR=0.189, 95% CI=0.04-0.80).

Discussion

In the present study, the majority (59.7%) of the mothers were within the age group of 26-35 years and multiparous. In addition, most of the participants were housewives and had higher education. As the results revealed, most of the subjects considered doctors as the only source for the correct use of medication (71.7%). The fear of drug side effects (83.4%) was also stated as the most important reason for refraining from self-medication. Similarly, in a study performed in Ethiopia, the most important reason for preventing self-medication in pregnant women was the fear of fetal health risk (75%) and the associated complications (23).

In the present study, the rate of self-medication in pregnant women was 8.7%, which is similar to a study performed in China (6.2%) (24). However, this rate has been reported as 30.6%, 72.4%, 26.6%, and 72% in

other studies performed in Iran, Nigeria, Ethiopia, and France, respectively (2, 15, 17, 25). Acetaminophen was reported as the most widely used drug in France (17) and Pakistan (26). However, in Nigeria and Saudi Arabia, analgesics and paracetamol were the most commonly applied medications (27). As the results of this study indicated, herbal drugs were the second most frequent drugs used arbitrarily by pregnant women after analgesia. The rate of self-medication with herbal drugs has been reported as 94% in Ilam (21).

In the present study, headache was the most common cause of self-medication, which is consistent with the results of similar studies carried out in France (79.6%) and Nigeria (33.3%) (2, 17). The most common reasons for self-medication were identified as easy access (without a prescription), previous use of medication, and achievement of satisfactory results from previous treatments. In the same vein, easy access to medications is reported as the most important reason for self-medication in Ethiopia (5) and Bangladesh (28) and as the third most important cause of self-medication in Pakistan (26). However, in another study conducted in Ethiopia, the prior experience of using medication was introduced as the most common cause of self-medication (48.4%) (23).

In this study, the main reasons for a low level of practicing self-medication in mothers were multiparity, high education level, health insurance, and fear of drug side effects, as well as considering doctors as the source of information. The most important reasons for choosing a pain reliever to deal with a headache in pregnant women can be easy access (without prescription), previous use of treatment, and achievement of satisfactory outcomes from the previous treatments. Regarding the fact that in the present study, the prevalence of the arbitrary use of analgesics (i.e., chemical agents), it seems that the arbitrary use of herbal medicines in Iranian women is high (21).

The results of this study indicated that the majority (86.1%) of the pregnant women had a moderate level of awareness about self-medication, which is similar to the results of the studies performed in Ilam (71%; Iran), Ethiopia (53%), Tehran (98%; Iran), and India

(96%) (21, 25, 29, 30). Furthermore, no significant difference was observed between the two groups of mothers with and without self-medication in terms of the level of awareness. Regarding this, maternal awareness had no effect on the rate of practicing self-medication, which is contrary to the results of a study conducted in Ethiopia (25). Awareness can be effective in self-medication.

Based on the logistic regression model in multivariate analysis, the determination of individual, social, and fertility factors associated with self-medication showed that an increase in the number of pregnancies significantly increased the chance of practicing self-medication. This result is in line with those reported in similar studies (5, 15, 23, 31). Consistent with the results obtained by Urmia (32), no significant relationship was observed between self-medication and maternal age. However, the results of some studies (2, 5, 15, 31) were indicative of a significant relationship between the two variables. Nonetheless, in most of the studies, maternal age and gravidity showed a significant relationship with self-medication during pregnancy.

Our results also revealed that a decrease in monthly income significantly increased the chance of self-medication, which is not shown in other studies (23, 25, 27, 33). Consistent with a study in Ethiopia, the mothers who had a history of illness had an increased probability of practicing self-medication. However, in a study performed in France, no significant association was reported between these variables (17). Additionally, an increase in spousal age and uncertainty about the effect of medications was accompanied by a decrease in the probability of using self-medication. However, this result was not confirmed in other similar studies (2, 5, 25, 32). This discrepancy could be due to the moderate level of awareness about self-medication among the women investigated in the present study.

Conclusion

In the present study, the majority of the subjects had higher education and were housewives. Based on the results, the rate of self-medication was at a low level. Although the mothers had a moderate level of awareness about self-medication, their awareness

regarding the cause and proper time of using drugs in the first trimester was at a low level. Therefore, it is required to provide proper education about medication use during pregnancy, and even after delivery or during lactation. Given the arbitrary use of herbal medicines in humans, it seems that mothers still do not have sufficient information on the complications of herbal medications (21). This underscores the need for establishing policies by the Ministry of Health for the education and provision of necessary information in this domain.

Since in this study, the majority of the mothers were housewives, and the source of most of their information was doctors, it seems that social media (e.g., radio and television) can be more effective in the provision of accurate information, especially for older and multiparous females. The present study has a number of limitations, including the recall bias of the medications used and fear of expressing the degree of self-medication. In addition, private hospitals were not included in the study. It is suggested to conduct further research on self-medication with herbal medicines and related factors in pregnant women.

Acknowledgements

Conflicts of interest

Authors declared no conflicts of interest.

References

1. 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 African Medical Journal. 2012; 13(1):15.
2. Emmanuel A, Achema G, Afoi BB, Maroof R. Self medicaltion practice among pregnant women attending antenatal clinic in selected hospitals in Jos, Nigeria. International Journal of Nursing and Health Science. 2014; 1(6):55-59.
3. Baghianimoghadam MH, Mojahed S, Baghianimoghadam M, Yousefi N, Zolghadr R. Attitude and practice of pregnant women regarding self-medication in Yazd, Iran. Archives of Iranian Medicine. 2013; 16(10):580.
4. Abdarzadeh N, Ezzatabadi MR, Rafiei S, Shafiei M, Tafti AD, Saghafi F, et al. Self-medication and contributing factors: a questionnaire survey among Iranian households. Journal of Medical Sciences. 2010; 5(3):17-21.
5. Befekadu A, Dhekama NH, Mohammed MA. Self-medication and contributing factors among pregnant women attending antenatal care in Ethiopia: the case of Jimma University Specialized Hospital. Medicine Science. 2014; 3(1):969-981.
6. Niksadat N, Solhi M, Shojaezade D, Gohari M. Effective factors in prevention of self-medication based on Health Belief Model in women referring to the health homes in Tehran's 3rd district, 2012. Journal of Society for Development in New Net Environment in B&H. 2013; 7:174-181.
7. Zhu X, Pan H, Yang Z, Cui B, Zhang D, Ba-Thein W. Self-medication practices with antibiotics among Chinese university students. Public Health. 2016; 130:78-83.
8. Azami-Aghdash S, Mohseni M, Etemadi M, Royani S, Moosavi A, Nakhaee M. Prevalence and cause of self-medication in Iran: a systematic review and meta-analysis article. Iranian Journal of Public Health. 2015; 44(12):1580.
9. Carrasco-Garrido P, Hernández-Barrera V, López de Andrés A, Jiménez-Trujillo I, Jiménez-García R. Sex differences on self-medication in Spain. Pharmacoepidemiology and Drug Safety. 2010; 19(12):1293-1299.
10. Jalilian F, Mehdi Hazavehei SM, Vahidinia AA, Jalilian M, Moghimbeig A. Prevalence and related factors for choosing self-medication among pharmacies visitors based on Health Belief Model in Hamadan Province, West of Iran. Journal of Research in Health Sciences. 2013; 13(1):81-85.
11. Purreza A, Khalafi A, Ghiasi A, Farrokh MF, Nurmohammadi M. To identify self-medication practice among Medical Students of Tehran University of Medical Science. Iranian Journal of Epidemiology. 2013; 8(4):40-46.
12. Sedighi B, Ghaderi-Sohi S, Emami S. Evaluation of self-medication prevalence, diagnosis and prescription in migraine in Kerman, Iran. Saudi Medical Journal. 2006; 27(3):377-380.
13. Shamsi M, Bayati A. A survey of the prevalence of self-medication and the factors affecting it in pregnant mothers referring to health centers in Arak city, 2009. Journal of Jahrom University of Medical Sciences. 2010; 7(3):34-42.
14. Tabiei SH, Farajzadeh Z, Eizadpanah AM. Self-medication with drug amongst university students of Birjand. Modern Care Journal. 2012; 9(4):371-377.
15. Afshary P, Mohammadi S, Najar S, Pajohideh Z, Tabesh H. Prevalence and causes of self-medication in pregnant women referring to health

centers in southern of Iran. International Journal of Pharmaceutical Sciences and Research. 2015; 6(2):612.

16. Mohseni M, Azami-Aghdash S, Sheyklo SG, Moosavi A, Nakhaee M, Pournaghi-Azar F, et al. Prevalence and reasons of self-medication in pregnant women: a systematic review and meta-analysis. International Journal of Community Based Nursing and Midwifery. 2018; 6(4):272-284.

17. Cabut S, Marie C, Vendittelli F, Sauvant-Rochat MP. Intended and actual use of self-medication and alternative products during pregnancy by French women. Journal of Gynecology Obstetrics and Human Reproduction. 2017; 46(2):167-173.

18. Lupattelli A, Spigset O, Twigg MJ, Zagorodnikova K, Mårdby AC, Moretti ME, et al. Medication use in pregnancy: a cross-sectional, multinational web-based study. BMJ Open. 2014; 4(2):e004365.

19. Dabirifard M, Maghsoudi Z, Dabirifard S, Salmani N. Frequency, causes and how to use medicinal herbs during pregnancy. The Iranian Journal of Obstetrics, Gynecology and Infertility. 2017; 20(4):66-75.

20. Leung KY, Lee YP, Chan HY, Lee CP, Hoi-Yin MT. Are herbal medicinal products less teratogenic than Western pharmaceutical products? Age. 2002; 30(5.1):30-40.

21. Pourtarkarani F, Direkvand-Moghadam A, Pournajaf A, Ghazanfari Z. Survey of knowledge, attitude and practice of Ilam pregnant women towards arbitrary use of drugs in pregnancy, 2013. Scientific Journal of Ilam University of Medical Sciences. 2016; 23(7):9-17.

22. Lawshe CH. A quantitative approach to content validity 1. Personnel Psychology. 1975; 28(4):563-575.

23. Abeje G, Admasie C, Wasie B. Factors associated with self medication practice among pregnant mothers attending antenatal care at governmental health centers in Bahir Dar city administration, Northwest Ethiopia, a cross sectional study. The Pan African Medical Journal. 2015; 20:276.

24. Liao S, Luo B, Feng X, Yin Y, Yang Y, Jing W. Substance use and self-medication during pregnancy and associations with socio-demographic data: a cross-sectional survey. International Journal of Nursing Sciences. 2015; 2(1):28-33.

25. Beza SW. Self-medication practice and associated factors among pregnant women in Addis Ababa, Ethiopia. Tropical Medicine and Health. 2018; 46(1):10.

26. Bohio R, Brohi ZP, Bohio F. Utilization of over the counter medication among pregnant women; a cross-sectional study conducted at Isra University Hospital, Hyderabad. Journal of Pakistan Medical Association. 2016; 66(1):68-71.

27. Raheel H, Alsakran S, Alghamdi A, Ajarem M, Alsulami S, Mahmood A. Antibiotics and over the counter medication use and its correlates among Arab pregnant women visiting a tertiary care hospital in Riyadh, Saudi Arabia. Pakistan Journal of Medical Sciences. 2017; 33(2):452.

28. Haque MU, Khatun MS, Amin NT, Afrin T, Jannat AO, Rashid S, et al. Prevalence and nature of self-medication of drugs among pregnant women in Rajshahi City, Bangladesh. European Journal of Preventive Medicine. 2016; 4(6):125-131.

29. Ziayee T, Gity A, Yaghmaye F, Akbarzadeh A. The survey of knowledge attitude and practice woman with pregnancy about drug consumer. Nursing and Midwifery Quarterly Shaheed Beheshti University of Medical Sciences. 2008; 18(62):42-48.

30. Singh N. Drug utilization patterns during antenatal period. Journal of Pharmacy Research. 2011; 4(10):3559-3561.

31. Bagheri A, Abbaszadeh F. Comparing the self-medication and supplement therapy in pregnant women in Kashan rural and urban areas. Journal of Mazandaran University of Medical Sciences. 2014; 24(114):151-157.

32. Ghaneie R, Hemmati MM, Baghi V. Self-medication in pregnant women. Journal of Research Development in Nursing & Midwifery. 2013; 10(1):92-98.

33. Ebrahimi H, Atashsokhan G, Amanpour F, Hamidzadeh A. Self-medication and its risk factors among women before and during pregnancy. Pan African Medical Journal. 2017; 27(1):183.