Self-medication among pregnant women attending outpatients' clinics in northern Jordan-a cross-sectional study

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Abstract
Self-medication can facilitate patients' access to medicinal products, save time, and reduce financial and health-care service use burden. On the other hand, irresponsible use of self-medications can result in adverse consequences. Self-medication is common among different demographic groups including pregnant women. In general, medicinal products might have harmful effects on mothers and baby. This study aimed to assess self-medication practices among pregnant women in the northern region of Jordan. A cross-sectional study was conducted on pregnant women attending outpatient clinics in the northern region of Jordan. Self-medication practices among the target population were assessed using a survey questionnaire that was administered through interviewer-assisted mode. Data were collected between December 2019 and September 2020, and descriptive statistics and inferential analysis were applied. A total of 1,313 pregnant women were surveyed (response rate = 95.50%). Self-medication and the use of herbal remedies were practiced by 33.10% and 32.14% of the participant, respectively. Headaches and general pains were the most frequently reported conditions treated by self-medication practice with either conventional medicinal products or herbal remedies. The gravidity (≥4) and the gestational stage (≥28 weeks) were the predictors of self-medication practice. This study showed that self-medication was not widely practiced by pregnant women in the northern region of Jordan. Disease simplicity and previous history were the main motives for self-medicating. Efforts should be made by health-care providers to address pregnant women and educate them to increase their awareness about the unsafe use of medicines and the harmful effects on fetus.

KEYWORDS
herbal remedies, Jordan, pregnant women, self-medication
1 | INTRODUCTION

Self-medication is defined as the "selection of medicines by individuals to treat self-recognized illness or symptom". By definition, self-medication involves the use of medicines to manage self-diagnosed conditions, symptoms, or the re-use of previously prescribed medications to manage re-current or chronic conditions or symptoms.

In comparison to prescribed medications, responsible self-medication is more convenient for patients in terms of health-care cost and accessibility to medicines, and it avoids unnecessary visits to health-care facilities. Moreover, responsible self-medication empowers patients to be more involved in the health care, and it improves knowledge and awareness on health and well-being. In addition to patient-level benefits, responsible self-medication is among the mechanisms used to support and maintain national health-care systems and sustainability.

On the other hand, improper self-medication is associated with several potential risks at individual, societal, and health-care service levels. Inappropriate self-medication practices might result in inaccurate self-diagnosis, masking of symptoms, delays in seeking medical care, incorrect choice of medicinal product or route of administration, unnecessary multiple drugs use, unwarranted adverse drug reactions, and misuse and abuse of medical products. Therefore, inappropriate self-medication might pose an undue burden on the health-care systems.

While self-medication is commonly practiced by different population groups, pregnant women are a patient group of particular interest due to the potential risks that self-medication may have on both mother and baby.

During the gestational period, pregnant women experience a variety of acute and minor ailments such as pain, headaches, nausea, heartburn, hemorrhoids, and urinary tract infections. Therefore, it is common for pregnant women to use non-prescription medicine and herbal remedies to manage and treat minor ailments.

Previous studies have reported that the prevalence of self-medication among pregnant women ranges from 2.2% to 72.4%. Available evidence shows that the most frequently used medications for self-treatment in pregnancy include analgesics, antacids, antibiotics, antihistamines, vitamins, and herbal preparations. Self-medication practicing pregnant women are driven by the desire for saving time and cost, relieving the disease promptly, and the familiarity with signs and symptoms. However, self-medication during pregnancy is associated with numerous risks that might result in structural and functional defects and abnormalities to the fetus or might lead to miscarriage.

Despite the risks associated with self-medication in pregnancy, self-medicating is on the rise globally, particularly in developing countries. The ease of facilitated access to over-the-counter (OTC) and prescription medications in the developing countries can result in and propel pregnant women to self-manage a variety of complaints and acute or short-term illnesses.

In Jordan, the practice of self-medication has been extensively investigated in the past two decades. Similar to other developing countries, the practice of self-medication in Jordan includes utilizing non-prescription and prescription medications, especially antibiotics. The primary source of self-medicated products is pharmacies, where medications can be purchased with or without the consultation of a pharmacist or other health-care professionals. Other sources of self-medication products are medicinal products shared between family members, friends, and neighbors and left-over medicinal products. The most predominant products used by Jordanians for self-medication are analgesics, cough and cold medicines, antibiotics, vitamins, antacids, laxatives, and antimotility agents.

While there is a number of studies that have investigated and described the prevalence and patterns of self-medication practices among different population groups in Jordan, there is no clear evidence available on self-medication practices among pregnant women. Therefore, this current study aimed to identify the prevalence and patterns of self-medication and the most commonly used self-medicated products and herbal remedies among pregnant women in Jordan.

2 | MATERIALS AND METHODS

2.1 | Study settings, design, and subjects

This study was a cross-sectional study that targeted pregnant women attending outpatients' clinics in the northern region of Jordan. Self-medication was defined as taking medications, herbal products, or supplements without rational prescriptions or as OTC medications. Pregnant females who are pregnant ≥8 weeks were invited to participate in the study and were recruited after obtaining a signed consent, and those who refused to participate were excluded from the study.

2.2 | Sample size

For the study, a minimal sample of 385 participants were needed. The sample size was calculated based on a 95% confidence interval, a standard deviation of 5%, 0.05 level of significance, and unlimited population size. The minimal sample would give adequate power for bivariate, multivariable analysis to be carried out. The sample size was calculated using Raosoft software sample size calculator.

2.3 | Data collection tool and study instrument

Self-medication practices among the targeted population were examined using a questionnaire instrument. The questionnaire was developed by the research team based on an extensive literature review, and guided by the study's aims and objectives. A panel of experts reviewed the initial draft of the questionnaire. The draft was piloted on a convenient sample of 10 pregnant women.
The resulting data from the pilot study were excluded from the final analysis. Following the expert review and survey piloting, necessary amendments were made.

The final version of the questionnaire consisted of 34 questions divided into four sections: section one: participant’s demographics and characteristics such as age, employment status, and level of education. Section two: participant’s obstetric history such as gravidity, parity, number of miscarriages, and the gestational age of the current pregnancy. Section three: utilization of herbal medicines during pregnancy (Supplementary Material 1).

In order to secure a high response rate, and to minimize the possibility of missing data and incomplete questionnaires, the questionnaire instrument was administered through interviewer-assisted administration route. Two research assistants (clinical pharmacists) were trained to carry out face-to-face structured interviews systematically.

In the period between December 2019 and September 2020, a total of 1,375 pregnant women attending outpatient’s clinics were approached by the research assistants. Eligible participants were provided with the participant’s information sheet, which outlined the research aim and objectives and the voluntary nature of their participation. Participants in the study were asked to sign and return the participant’s consent form. Each participant was assigned an anonymous participant identification code.

2.4 | Statistical analysis

Descriptive statistics in the form of frequencies, percentages, mean, and standard deviation (SD) were used to report patient demographics, and Pearson’s Chi-square test and T-test were used for group comparison in traits. Univariate analysis was used to compare participants who practiced self-medication and who did not. The comparison was carried out in terms of age, employment status, level of education, and obstetric history such as gravidity, gestational age, and mode of previous deliveries.

Associations between participants’ demographics and gestational history and self-medication practices were examined using binary logistic regression; a two-sided \( p < 0.05 \) was considered as statistically significant. Data analysis was carried out using IBM Statistical Package for the Social Sciences (SPSS®).

2.5 | Ethical consideration

The Research Ethics Committee granted ethical approval at Jordan University of Science and Technology (JUST) and King Abdullah University Hospital (KAUH), Irbid, Jordan (Reference No.: 13/1/2888). Additionally, the Jordanian Ministry of Health reviewed and approved the study protocol (Reference No.: MoH/REC/2019/219).

3 | RESULTS

3.1 | Demographic data

Over 9 months, a total of 1,313 of 1,375 women agreed to take part in the study (response rate of 95.50%). 62 women declined to participate due to time limitation or personal reasons. The vast majority of recruited participants, 1,237 (94.2%), were attending hospital-based outpatient clinics. The mean age of participants was 28.54 ± 8.36 years. The majority of the study participants, 978 (74.50%), were unemployed, and only 78 (5.90%) were employed at a medical field at the time of the interviews. Regarding the level of education, 818 participants (62.30%) had an academic degree (college or university).

3.2 | Obstetric history

Of the 1,313 participants, 772 (58.80%) were in their third trimester. The majority of recruited participants, 1,100 (83.80%), had a history of pregnancy, with 507 (38.60%) having a history of four pregnancies or more. Four hundred and seventy-seven (36.40%) participants experienced miscarriage. Vaginal delivery was the most common mode of delivery, reported by 624 (47.50%) participants. Smoking was reported by only 86 (6.60%) of the study participants. Table 1 summarizes participants’ demographics and obstetric history.

3.3 | Patterns of self-medication practices during pregnancy

Self-medication was reported by 434 (33.1%) participants, of which 362 (83.4%) used one medicinal product without prescription. Only nine self-medicating participants (2.1%) reported that they had got harmful effect from self-medication practice while only four of them (0.9%) needed hospitalization.

Among the conditions for which participants use medications without a prescription, headache and joint pain were the most frequently reported by 371 (85.5%) participants, followed by common cold by 51 (11.8%) of the study participants. Therefore, it was not surprising that analgesics and pain killers were the most frequently used medications without prescription, used by 383 (88.2%) participants. On the other hand, 58 (13.4%) participants reported the utilization of antibiotics without prescription. Of the 434 self-medication practicing participants, 345 (79.5%) got their medication from the pharmacy (Table 2).

Practicing self-medication was driven by previous experiences with the disease and simplicity of the condition as reported by 47.7% and 36.6% of self-medicating participants, respectively. On the other hand, among the 879 (66.9%) participants who avoided self-medication, 563 (64.1%) were concerned about harming their fetuses, and 548 (62.4%) were worried about abortion (Figure 1).
| Investigated Attributes | Overall Study Participants N (%) | Practicing Self-medication N (%) | Not Practicing Self-medication N (%) |
|-------------------------|----------------------------------|----------------------------------|-------------------------------------|
| Number of participants  | 1,313 (100%)                     | 434 (33.1%)                      | 879 (66.9%)                        |
| Participants’ Age (Years), mean±SD | 28.54 ± 8.37 | 31.11 ± 5.71 | 29.28 ± 5.67 |
| Outpatient Clinic       |                                  |                                  |                                    |
| King Abdullah University hospital | 464 (35.3%) | 141 (32.5%) | 323 (36.8%) |
| Princess Raya Hospital   | 410 (31.2%) | 144 (33.2%) | 266 (30.3%) |
| Princess Basmah Hospital | 310 (23.6%) | 115 (26.5%) | 195 (22.2%) |
| JUST Health Center       | 55 (4.2%)  | 14 (3.2%)   | 41 (4.7%)  |
| Princess Badea’a Hospital| 53 (4.0%)  | 14 (3.2%)   | 39 (4.4%)  |
| Others                  | 21 (1.6%)  | 6 (1.4%)    | 15 (1.7%)  |
| Level of Education      |                                  |                                  |                                    |
| Upper secondary school or less | 495 (37.7%) | 165 (38.0%) | 330 (37.5%) |
| Bachelor or diploma degree | 774 (59.0%) | 257 (59.2%) | 517 (58.8%) |
| Postgraduate degree      | 44 (3.4%)  | 12 (2.8%)   | 32 (3.6%)  |
| Employment Status       |                                  |                                  |                                    |
| Unemployed              | 495 (37.7%) | 165 (38.0%) | 330 (37.5%) |
| Employed at non-medical field | 774 (59.0%) | 257 (59.2%) | 517 (58.8%) |
| Employed at medical field | 44 (3.4%)  | 12 (2.8%)   | 32 (3.6%)  |
| Health insurance        |                                  |                                  |                                    |
| Insured                 | 1010 (76.9%) | 340 (78.3%) | 670 (76.2%) |
| Uninsured               | 303 (23.1%) | 94 (21.7%)  | 209 (23.8%) |
| Medical and obesity history |                                  |                                  |                                    |
| Gestational age of the current pregnancy |                                  |                                  |                                    |
| ≤ 15 weeks              | 183 (13.9%) | 39 (8.9%)   | 144 (16.4%) |
| 16–27 weeks             | 358 (27.3%) | 116 (26.7%) | 242 (27.5%) |
| ≥ 28 weeks              | 772 (58.8%) | 279 (64.3%) | 493 (56.1%) |
| Number of previous pregnancies |                                  |                                  |                                    |
| None                    | 213 (16.2%) | 38 (8.8%)   | 175 (19.9%) |
| 1–3 pregnancies         | 593 (45.2%) | 183 (42.2%) | 410 (46.6%) |
| 4 or more pregnancies   | 507 (38.6%) | 213 (49.1%) | 294 (33.4%) |
| Number of miscarriage   |                                  |                                  |                                    |
| None                    | 836 (63.7%) | 265 (61.1%) | 571 (65.0%) |
| 1–3                     | 450 (34.3%) | 164 (37.8%) | 286 (32.5%) |
| ≥4                      | 27 (2.1%)   | 5 (1.2%)    | 22 (2.5%)  |
| Mode of delivery<sup>a</sup> |                                  |                                  |                                    |
| Vaginal                 | 624 (47.5%) | 233 (53.7%) | 391 (44.5%) |
| Cesarean section        | 476 (36.3%) | 163 (37.6%) | 313 (35.6%) |
| Have not given birth before | 213 (16.2%) | 38 (8.8%)   | 175 (19.9%) |
| Smoking                 |                                  |                                  |                                    |
| Yes                     | 86 (6.6%)   | 34 (7.8%)   | 52 (5.9%)   |
| No                      | 1227 (93.5%)| 400 (92.2%) | 827 (94.1%) |

Abbreviations: JUST, Jordan University of Science and Technology; N, Number; SD, Standard Deviation
<sup>a</sup> In the last pregnancy
In discussing seeking medical advice, 275 (63.4%) of self-medicating participants did not pursue their physicians’ advice before using the medications. In fact, 268 (61.8%) of self-medicating participants relied on their previous experiences and knowledge in choosing and utilizing medicines. However, the majority of self-medicating participants, 271 (62.4%), reported that they had read the patient’s information leaflet, especially the adverse drug reactions and warning and contraindication sections (Table 2).

3.4 | Medical advice and source of information

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3.5 | The pattern of utilizing herbal remedies during pregnancy

Of the 1,313 participants, 422 participants (32.14%) reported that they use herbal remedies to relieve and manage general pain (23.5%), abdominal pain (15.6%), and cough (14.7%). The vast majority of herbal remedies utilizers (75.6%) considered herbal remedies to be safer and have fewer side effects compared to conventional medicines. On the contrary, 531 (59.6%) of herbal remedies non-users believed that herbal remedies might cause miscarriage. Finally, of the 1,313 participants, only 170 (12.9%) reported the concomitant use of herbal remedies and non-prescription medicines (Table 3).
3.6 | Predictors of self-medication in pregnancy

Univariate analysis showed that being an older mother, being pregnant for four or more times, and the gestational age of ≥28 weeks were significantly associated with self-medication (p < .001). On the contrary, self-medication was not significantly associated with the level of education, employment status, history of bad obstetric, or mode of delivery (p-value > .05).

The logistic regression model, using a backward stepwise (Wald) method, revealed that there were two factors significantly associated with practicing self-medication by pregnant women: the gestational age of the current pregnancy (Odds Ratio (OR) = 1.385, 95% Confidence Interval (CI): 1.09–1.76), and gravidity of four or more pregnancies (OR = 1.901, 95% CI: 1.50–2.41) (Table 4).

4 | DISCUSSION

Self-care practice and intervention are being promoted as cost-effective tools that can maintain health and well-being and save scarce resources. Self-medication is one of the frequently reported self-care practices at the individual level.5,38 Self-medication is a common practice in Jordan, and it is driven by a variety of socio-economic factors.7,39 This is the first study that investigated self-medication practices among pregnant women in Jordan. The questionnaire instrument collected data related to participants’ demographics, obstetric history, self-medication patterns, drivers for self-medication, factors associated with self-medication, sources of medical information, and the utilization of herbal remedies.

Similar to the globally reported prevalence of self-medication among pregnant women, emerging evidence from this study showed that pregnant women did not widely practice self-medication practice, with around one-third (33%) self-medicated themselves.22 However, the prevalence of self-medication among Jordanian pregnant women is lower than that reported by the general population.33 The lower prevalence could be explained by the notion that pregnant women are generally more concerned about the harm, especially teratogenic effect that medicinal products may have on their fetus.40,41

Gastrointestinal conditions, such as heartburn, hemorrhoids, constipation, nausea, and vomiting, are among the most frequently reported complaints during pregnancy.42 However, only 9% of the self-medicating participants used medicines to treat nausea and vomiting, and only 7.1% and 3% of herbal remedies users relied on these remedies to manage excessive intestinal gases and constipation, respectively. Not relying on self-medication and herbal remedies can be attributed to the fact that these complaints are self-limiting in general and can be treated by non-pharmacological intervention and lifestyle modifications.43 In line with national, regional, and international trends, self-medicating participants mainly used medicinal products to manage headaches and pain, and their medicine of choice was analgesic, especially paracetamol, which was the pain reliever of choice during pregnancy.34,44-47

![FIGURE 1 Reasons for avoiding self-medication](image-url)
Similar to global studies, mainly in developing countries, our study showed that familiarity with the disease and its simplicity were the main drivers for self-medication among the study cohort. \(^{24,48}\) The same motives were reported in the study that targeted pharmacy students in Jordan. \(^{34}\) Frequently, the absence of medical health insurance, limited access to health-care professionals, and the high cost of medical fees were reported to drive self-medication practices. \(^{20,22,33}\) However, in this study, insurance was not significantly associated with self-medication practice nor was accessibility to health-care service. The lack of influence of health insurance might be explained by the fact that the majority of the study participants had health insurance and were already visiting a hospital-based clinic.

The choice of medication for self-treatment was influenced by a number of extrinsic and intrinsic factors. The intrinsic factors were more dominant, as the majority of medicating participants relied on their previous experiences and knowledge in selecting their medication. On the other hand, less than one-third followed the advice of their physicians. Pharmacists were not the primary source of information; this is particularly interesting as pharmacists are the most accessible and approachable health-care professionals; patients interact with and seek pharmacists’ advice more often than other health-care professionals. \(^{38,49}\) Moreover, pharmacists are considered to be the first point of contact for patients in the northern region of Jordan. \(^{50}\)

The effect of previous experiences was also evident in assessing factors associated with self-medication practices. Results showed that practicing self-medication was found to be significantly associated with having previous pregnancies and being in the third trimester. Previous pregnancies might have equipped mothers with needed knowledge and experiences and made them more comfortable in treating their illnesses by themselves.

For this study, the research team used location-based sampling to identify eligible participants, that is, pregnant women. This sampling technique facilitated getting access to eligible participants in a timely manner. Its effect was also evident in the high response rate achieved for this study.

As previously mentioned in the methods section, this study deployed interviewer-administered response mode. Adopting interviewer-assisted mode helps in getting high response rate, limiting cases of missed responses (missing data), minimizing the possibility of misinterpreting questions, and enabling interviewers to elaborate and explain the questions to the participants. This effect was evident in securing a high response rate (95.5%) of the approached eligible participant, and the absence of missing data and incomplete surveys. Moreover, the adopted response mode allowed for providing detailed answers regarding the type of used medications, treated health conditions, reasons for self-medication, and source of information. Despite the fact that Jordan has one of the highest rate of smoking worldwide, with 17% of Jordanian women are smokers, \(^{51}\) only 6.6% of the study participants reported to be a smoker. The lower reported smoking rate could be attributed to response bias, where participants might be uncomfortable or embarrassed to say that they were smoking despite being pregnant.

## TABLE 3  Use of herbal remedies during pregnancy

| Investigated Attributes                                      | Number of Participants (%) |
|--------------------------------------------------------------|----------------------------|
| Health condition (complaint) for which herbal remedies were used |                            |
| Yes                                                          | 422 (32.1%)                |
| No                                                           | 891 (67.9%)                |
| Health condition (complaint) for which herbal remedies were used (N = 422) |                            |
| General pain                                                  | 99 (23.5%)                 |
| Cough                                                        | 62 (14.7%)                 |
| Excessive intestinal gases                                    | 30 (7.1%)                  |
| Constipation                                                  | 14 (3.3%)                  |
| Abdominal pain                                                | 66 (15.6%)                 |
| Nausea                                                       | 23 (5.5%)                  |
| Others                                                       | 128 (30.3%)                |
| Reasons for using herbal remedies (N = 422) \(^{a}\)          |                            |
| Herbals remedies are more effective than medical products     | 23 (5.5%)                  |
| Herbals remedies have fewer side effects                     | 319 (75.6%)                |
| Herbal remedies at a lower cost                              | 17 (4.0%)                  |
| Herbals remedies can be obtained without a prescription       | 18 (4.3%)                  |
| The treated disease is not a serious one                      | 76 (18.0%)                 |
| Time saving                                                  | 10 (2.4%)                  |
| Reasons for not using herbal remedies (N = 891) \(^{a}\)      |                            |
| May cause abortion                                           | 531 (59.6%)                |
| May harm mother and fetus                                    | 126 (14.1%)                |
| Not a recommended practice                                   | 81 (9.1%)                  |
| May Harm fetus                                               | 78 (8.8%)                  |
| No need to use herbal remedies                               | 78 (8.8%)                  |
| Insufficient information                                     | 53 (5.9%)                  |

Abbreviations: N, number.\(^{a}\)Participants were able to provide more than one answer.

## TABLE 4  Predictors of self-medication practice during pregnancy

| Independent variable | B     | SE    | Odds ratio | 95% CI | p-value |
|----------------------|-------|-------|------------|--------|---------|
| Age of current pregnancy ≥ 28 | 0.326 | 0.122 | 1.385      | 1.09–1.76 | 0.008* |
| Gravidity ≥ 4        | 0.642 | 0.120 | 1.901      | 1.50–2.41 | <0.001* |

Abbreviations: B, Regression coefficient; SE, Standard Error associated with the coefficient B. \(^{a}\)p-value <0.05.
5 | LIMITATIONS

The current study targeted pregnant women attending outpatients' clinic in the northern region of Jordan "location-based sampling", which minimizes the diversity in the study sample and hence limit the generalizability of the study findings.

The use of interviewer-administered response mode may trigger response bias, where participants feel that they have to provide a socially desirable response. Self-medication is not widely encouraged for pregnant women, so there is a possibility that some participants provided an inaccurate account of their self-medication practices. Participants might be obliged to provide socially acceptable answers, and not to be viewed as irresponsible mothers with tendencies of harming their fetuses.

6 | CONCLUSION

Our study showed that one-third of the study participants self-medicated or used herbal remedies during pregnancy. Being in the third trimester and the number of previous pregnancies (gravidity ≥4) were found to be predictors of self-medication practice. It is recommended that health-care providers, such as pharmacists and physicians, should address pregnant women and educate them to increase their awareness about the unsafe use of medicines and the harmful effects on fetuses. Pharmacists should follow evidence-based practice guidelines and consider the harmful risk when dispensing medications for pregnant women without rational prescriptions or even OTC medication.

The study can be enhanced by targeting a more diverse population and recruitment sites. The future research should look more deeply and comprehensively into socioeconomic factors such as income, type of insurance (private vs. public), place of residence (urban vs. rural), social norms, and behavioral cues.

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CONFLICT OF INTEREST

The authors have declared no conflict of interest.

AUTHOR CONTRIBUTIONS

Mervat M Alsous conceived and designed the research, analyzed the data, and wrote and revised the manuscript. Sayer I Al-azzam conceived and designed the research, and wrote and revised the manuscript. Mohammad B Nusair conceived and designed the research, and wrote and revised the manuscript. Saja A Alnahar conceived and designed the research, and wrote and revised the manuscript. Nail A Obeidat conceived and designed the research and revised the manuscript.

DATA AVAILABILITY STATEMENT

Raw data of the study are available from the corresponding author upon reasonable request.

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REFERENCES

1. World Health Organization (WHO). The Role of the Pharmacist in Self-Care and Self-Medication: report of the 4th WHO Consultative Group on the Role of the Pharmacist. World Health Organization; 1998:26-28.
2. World Health Organization (WHO). Guidelines for the regulatory assessment of Medicinal Products for use in self-medication. World Health Organization; 2000.
3. Hughes CM, McElnay JC, Fleming GF. Benefits and risks of self medication. Drug Saf. 2001;24(14):1027-1037.
4. Vidyavati S, Sneha A, Kamardin J, Katti S. Self medication-reasons, risks and benefits. Int J Healthc Biomed Res. 2016;4(04):4.
5. Hemminki E, Silvo S. Finnish physicians’ opinions of vaginal estriol in self-care. Maturitas. 1999;31(3):241-247.
6. Brass EP. Changing the status of drugs from prescription to over-the-counter availability. N Engl J Med. 2001;345(11):810-816.
7. Ansari M. Sociobehavioral aspects of medicines use in developing countries. In: Ibrahim MIM, Wertheimer AI, Babar ZUD, eds. Social and Administrative Aspects of Pharmacy in Low-and Middle-Income countries. Elsevier; 2018:15-33.
8. World Self-medication Industry. The Story of Self-Care and Self-Medication, 40 Years of Progress. Ferney-Voltaire France; 2010:1970-2010.
9. Noone J, Blanchette CM. The value of self-medication: summary of existing evidence. J Med Econ. 2018;21(2):201-211.
10. Bennadi D. Self-medication: a current challenge. J Basic Clin Pharm. 2013;5(1):19.
11. Ruiz ME. Risks of self-medication practices. Curr Drug Saf. 2010;5(4):315-323.
12. Alghanim S. Self-medication practice among patients in a public health care system. East Mediterr Health J. 2011;17(5):409-416.
13. Brandão GR, Teixeira L, Araújo L, Paula C, Ribeiro O. Self-medication in older european adults: Prevalence and predictive factors. Arch Gerontol Geriatr. 2020;91:104189.
14. Alhomoud F, Aljamea Z, Almahasnah R, Alkhailhah K, Basalelah L, Alhomoud FK. Self-medication and self-prescription with antibiotics in the Middle East—do they really happen? A systematic review of the prevalence, possible reasons, and outcomes. Int J Infect Dis. 2017;57:3-12.
15. Chaves RG, Lamounier JA, César CC. Self-medication in nursing mothers and its influence on the duration of breastfeeding. J Pediatr (Rio J). 2009;85(2):129-134.
16. Shehnaz SI, Agarwal AK, Khan N. A systematic review of self-medication practices among adolescents. J Adolesc Health. 2014;55(4):467-483.
17. Adanikin AI, Awoleke JO. Antenatal drug consumption: the burden of self-medication in a developing world setting. Trop Doct. 2017;47(3):193-197.
18. Creanga AA, Sabel JC, Ko JY, et al. Maternal drug use and its effect on neonates: a population-based study in Washington State. Obstet Gynecol. 2012;119(5):924-933.
19. 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. J Pak Med Assoc. 2016;66(1):68-71.

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2. World Health Organization (WHO). Guidelines for the regulatory assessment of Medicinal Products for use in self-medication. World Health Organization; 2000.
3. Hughes CM, McElnay JC, Fleming GF. Benefits and risks of self medication. Drug Saf. 2001;24(14):1027-1037.
4. Vidyavati S, Sneha A, Kamardin J, Katti S. Self medication-reasons, risks and benefits. Int J Healthc Biomed Res. 2016;4(04):4.
5. Hemminki E, Silvo S. Finnish physicians’ opinions of vaginal estriol in self-care. Maturitas. 1999;31(3):241-247.
6. Brass EP. Changing the status of drugs from prescription to over-the-counter availability. N Engl J Med. 2001;345(11):810-816.
7. Ansari M. Sociobehavioral aspects of medicines use in developing countries. In: Ibrahim MIM, Wertheimer AI, Babar ZUD, eds. Social and Administrative Aspects of Pharmacy in Low-and Middle-Income countries. Elsevier; 2018:15-33.
8. World Self-medication Industry. The Story of Self-Care and Self-Medication, 40 Years of Progress. Ferney-Voltaire France; 2010:1970-2010.
9. Noone J, Blanchette CM. The value of self-medication: summary of existing evidence. J Med Econ. 2018;21(2):201-211.
10. Bennadi D. Self-medication: a current challenge. J Basic Clin Pharm. 2013;5(1):19.
11. Ruiz ME. Risks of self-medication practices. Curr Drug Saf. 2010;5(4):315-323.
12. Alghanim S. Self-medication practice among patients in a public health care system. East Mediterr Health J. 2011;17(5):409-416.
13. Brandão GR, Teixeira L, Araújo L, Paula C, Ribeiro O. Self-medication in older european adults: Prevalence and predictive factors. Arch Gerontol Geriatr. 2020;91:104189.
14. Alhomoud F, Aljamea Z, Almahasnah R, Alkhailhah K, Basalelah L, Alhomoud FK. Self-medication and self-prescription with antibiotics in the Middle East—do they really happen? A systematic review of the prevalence, possible reasons, and outcomes. Int J Infect Dis. 2017;57:3-12.
15. Chaves RG, Lamounier JA, César CC. Self-medication in nursing mothers and its influence on the duration of breastfeeding. J Pediatr (Rio J). 2009;85(2):129-134.
16. Shehnaz SI, Agarwal AK, Khan N. A systematic review of self-medication practices among adolescents. J Adolesc Health. 2014;55(4):467-483.
17. Adanikin AI, Awoleke JO. Antenatal drug consumption: the burden of self-medication in a developing world setting. Trop Doct. 2017;47(3):193-197.
18. Creanga AA, Sabel JC, Ko JY, et al. Maternal drug use and its effect on neonates: a population-based study in Washington State. Obstet Gynecol. 2012;119(5):924-933.
19. 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. J Pak Med Assoc. 2016;66(1):68-71.

AUTHOR CONTRIBUTIONS

Mervat M Alsous conceived and designed the research, analyzed the data, and wrote and revised the manuscript. Sayer I Al-azzam conceived and designed the research, and wrote and revised the manuscript. Mohammad B Nusair conceived and designed the research, and wrote and revised the manuscript. Saja A Alnahar conceived and designed the research, and wrote and revised the manuscript. Nail A Obeidat conceived and designed the research and revised the manuscript.
20. Lupattelli A, Spigset O, Twigg MJ, et al. Medication use in pregnancy: a cross-sectional, multinational web-based study. BMJ open. 2014;4(2).

21. McKenna L, McIntyre M. What over-the-counter preparations are pregnant women taking? A literature review. J Adv Nurs. 2006;56(6):636-645.

22. Mohseni M, Azami-Aghdash S, Sheyko SG, et al. Prevalence and reasons of self-medication in pregnant women: a systematic review and meta-analysis. Int J Community Based Nurs Midwifery. 2018;6(4):272.

23. Zewdie T, Tsalahi A, Ghebreyohannes D, et al. Prevalence and reasons of self-medication among pregnant women: a systematic review and meta-analysis. Nurs Midwifery Studies. 2019;8(4):169-175.

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

25. Koren G, Pastuszak A, Ito S. Drugs in pregnancy. N Engl J Med. 1998;338(16):1128-1137.

26. Nakhai-Pour HR, Broy P, Sheehy O, Bérard A. Use of nonaspirin nonsteroidal anti-inflammatory drugs during pregnancy and the risk of spontaneous abortion. CMAJ. 2011;183(15):1713-1720.

27. Zewdie T, Azale T, Shimeka A, Lakew AM. Self-medication during pregnancy and associated factors among pregnant women in Goba town, southeast Ethiopia: a community based cross sectional study. BMC Res Notes. 2018;11(1):1.

28. Al-Azzam S, Al-Husein B, Alzoubi M, Masadeh M, Al-Horani A. Self-medication with antibiotics in Jordanian population. Int J Occup Environ Health. 2007;11(4):373.

29. Alkhatabeh MJ, Alfanq Q, Alqudah M. Prevalence of self-medication practices among medical and pharmacy students: a study from Jordan. Int J Pharm. 2016;54(5):390.

30. Nusair MB, Al-azzam S, Alhamed H, Momani MY. The prevalence and patterns of self-medication with antibiotics in Jordan: a community-based study. Int J Pharm. 2020.e13665.

31. Haddadin RN, Alsous M, Wazaiyf M, Tahaine L. Evaluation of antibiotic dispensing practice in community pharmacies in Jordan: a cross sectional study. PLoS One. 2019;14(4):e0216115.

32. Alshogran OY, Alzoubi KH, Khoury O, Farah S. Patterns of self-medication among medical and nonmedical University students in Jordan. Risk Manag Healthc Policy. 2018;11:169.

33. Youssef A-MM, Al-Bakri AG, Bustanji Y, Wazaiyf M. Self-medication patterns in Amman, Jordan. Pharm World Sci. 2008;30(1):24-30.

34. Alsous M, Elayeh E, Jalil MA, Alhawmdeh E. Evaluation of Self-Medication Practice among Pharmacy Students in Jordan. J Pharm Sci. 2018;11(1).

35. Mukattash TL, Alkhatabeh MJ, Andrawos S, Jarab AS, AbuFarha RK, Nusair MB. Parental self-medication of antibiotics for children in Jordan. J Pharm Health Serv Res. 2020;11(1):75-80.

36. Mukattash TL, Jarab AS, Khawaldeh A, Nusair M. Parental self-treatment of their children in Jordan, a qualitative study. J Pharm Health Serv Res. 2019;10(3):317-323.

37. Jambo A, Mengistu G, Sisay M, Amare F, Edessa D. Self-medication and contributing factors among pregnant women attending antenatal care at public hospitals of Harar town, Ethiopia. Front Pharmacol. 2018;9:1063.

38. Rüter P. Role of community pharmacists in patients’ self-care and self-medication. Integr Pharm Res Pract. 2015;4:57.

39. Alfanq Q, Halboup A. Pharmacy practice in Jordan. In: Fathelrahman AI, Ibrahim MM, Wertheimer AI, eds. Pharmacy practice in developing countries. Elsevier. 2016;211-232.

40. Zaki NM, Albarrax AA. Use, attitudes and knowledge of medications among pregnant women: a study. Saudi Pharma J. 2014;22(5):419-428.

41. Sanz E, Gómez-López T, Martínez-Quintas MJ. Perception of teratogenic risk of common medicines. Eur J Obstet Gynecol Reprod Biol. 2001;95(1):127-131.

42. Vazquez JC. Constipation, haemorrhoids, and heartburn in pregnancy. BMJ Clin Evid. 2010;2010;1411.

43. Krinsky DL, Berardi F, Ferreri S, Hume A, Newton G, Rollins C. Handbook of Non-Prescription Drugs: an Interactive Approach to Self-Care. American Pharmacists Association Washington; 2018.

44. Al Bahhawi T, Dower AA, Sawadi RM, et al. Consumption habits of pregnant women in the Jazan region, Saudi Arabia: a descriptive study. BMC Res Notes. 2018;11(1):817.

45. Headley J, Northstone K, Simmons H, Golding J. ALSPAC Study Team. Medication use during pregnancy: data from the Avon Longitudinal Study of Parents and Children. Eur J Clin Pharmacol. 2004;60(5):355-361.

46. Zafeiri A, Mitchell RT, Hay DC, Fowler PA. Over-the-counter analgesics during pregnancy: a comprehensive review of global prevalence and offspring safety. Hum Reprod Update. 2020;27(1):67-95.

47. Black RA, Hill DA. Over-the-counter medications in pregnancy. Am Fam Physician. 2003;67(12):2517-2524.

48. Babu MM. Factors contributing to the purchase of over the counter (OTC) drugs in Bangladesh: an empirical study. Internet J Third World Med. 2008;6(2):9-24.

49. Tsuyuki RT, Beahm NP, Okada H, Al Hamarneh YN. Pharmacists as Accessible Primary Health Care Providers: review of The evidence. SAGE Publications Sage CA; 2018.

50. Abu-Helalah M, Nawafleh A, Al-Sheraideh H. Determinants of Access to Primary Healthcare Services in Jordan-A National Cross-sectional study. High Health Council; 2015.

51. Safi M, Al-Tahat J. Jordan smoking rates highest in world amid claims of big tobacco interference: Guardian News & Media Limited 2020 [cited 21 Nov 2020]. Available from: https://www.theguardian.com/world/2020/jun/23/jordan-smoking-rates-highest-in-world-amid-claims-of-big-tobacco-interference.

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

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