Epidemiology of Self-Medication Practice among Libyans: A Systematic Review and Meta-Analysis

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Disclosures

The author declares no conflicts of interest.

ABSTRACT

Background and objectives: In Libya, prescription medicines can easily be dispensed without a prescription, as self-medication with the subsequent of potential misuse and unnecessary risk for patients. This systematic review and meta-analysis explored the prevalence of self-medication among citizens in Libya. **Methods:** We systematically searched PubMed, ISI Web of Knowledge, EMBASE, Medline, Scopus, google scholar and ResearchGate databases for studies published in Libya reporting the prevalence of non-prescription use of medicines in community pharmacies, targeting studies published from Jan 2008 until Dec 2019. A random meta-analysis was performed to analyze pooled estimates of non-prescription usage of medicines. **Results:** Out of 63 articles identified, a total of 13 papers from 7 cities were met the inclusion criteria and involved a total of 4741 subjects. The overall pooled proportion of self-medication of drugs was 53.6% (95% CI: 0.93% - 1.08%), with low heterogeneity and the P-value of the whole population tasted was found to be = 1.000 (df = 12). Seven out of the 13 studies reported data on self-medication for antibiotics without prescription. The records ranged from 15.3% (95% CI 0.61–1.65) in Misurata to 76.6% (95% CI 0.80–1.25) in Tripoli. **Conclusion**: Self-medication use of medicines among Libyan population is a common phenomenon involving a high proportion use of antibiotics. This misuse of medications could enhance the development and spread of antibiotic resistance.

Keywords: Self-medication, dispensing, drug, prescription, misuse, Libya.

INTRODUCTION

Practices of self-medication is commonly seen phenomenon and known to cause a global public health issues [1]. The term self-medication, as described by WHO, represents to the utilization of medication without medical prescription to treat self-diagnosed illnesses or to promote health [2]. Many patients may treat themselves and self-medicate, using either over-the-counter (OTC) medication or prescribed medicines without prescription, including antibiotics [3].

In many cases, sources of self-medication are relatives, colleagues or friends, who share both the drugs and the information about how to use. This practice encourages of acquisition of new drug without referring to doctor to identify if the active principle is proper [4]. Nevertheless, numerous factors such as lack of trust on physician, lack of time and access to health care, and physician fees have been shown to affect self-medication behavior [5,6].

OTC drugs are remedies that are approved for self-medication because of their indication is simply known by patients and generally considered as safe and effective medicines. Paracetamol and other NSAIDs used to relief pain are among these OTC medicines. Nevertheless, self-medication is not restricted to OTC drugs, and patients using prescription medications as self-medication [7]. These drugs maybe left over from a previous treatment, or purchased straightforward from the community pharmacies without a prescription [8].

In some countries, patients encouraged for self-medication in order to treat minor illnesses [9]. This self-practice is perceived by their authorities as a prospect to held responsibility for maintaining their own health. On the other hand, some nations have implemented rigorous policies to prevent the drug misuse, targeting to upsurge patient's self-alertness and to diminish unsuitable self-medication that causes depletion of resources, increase of chance of bacterial resistance and drug adverse reactions [10].

Self- medication is a major public health concern and is practiced worldwide, with a reported prevalence ranging from low prevalence in developed countries and much higher in developing and undeveloped countries [11-14]. In addition, the few studies conducted in Libya stated a high prevalence of self-medication. Prevalence extending from 15.3% in Misurata city [15] to 46% among non-medical students from the Benghazi University [16] to 56.19% in the city of Tripoli [17] have been reported.

In Libya, prescription medications can easily be dispensed without prescription from community pharmacies, resulting in potential drug misuse and health hazard [18]. Further, some patients urged doctors to prescribe antimicrobials for them in believing of the effectiveness of antibiotics treatment [19]. The concern of self-medication among population in Libya signifies an emerging area in the scientific exploration. Hence, combination of all available information could be valuable in order to attain a single quantitative assessment and to obtain precious conclusions than those reported from separate studies. For this purpose, a systematic review and meta-analysis were performed in order to explore the occurrence of self-medication practice among the Libyan population. To the best of our knowledge, this is the first systematic review to examine drug self-medication in Libya.

METHODS

Data collection

A systematic search of literature was done in order to identify publications from EMBASE, Medline, ISI Web of science, google scholar, and ResearchGate that reported the following

keywords: 'Libya', 'self-medication', 'self-prescription', 'over the counter medication', 'dispensing practice', "antibiotics' and 'self-administration' from January 2008 until December 2019. All manuscripts written in English or Arabic were considered. Exclusion criteria were data from included publications, review articles, and study on animal models.

Study selection

Initially, the results retrieved from the search were analyzed separately to explore possibly eligible criteria. The publications were arranged by title and abstracts and only entitled studies were included for full text assessment. Through this phase, all unrelated publications (lack of relevance, studies on animals, data present in other publications, case reports, and review articles) were considered as exclusion criteria. Publications in non-English or Arabic language were also excluded. Finally, only articles with eligible criteria were selected and examined.

Data extraction

The full articles were reviewed and screened to extract self-medication practices details. For each study, the following details were extracted; author, year of publication, place and study design, prevalence of self-medication or consumption rate, and drugs most commonly consumed or prescribed.
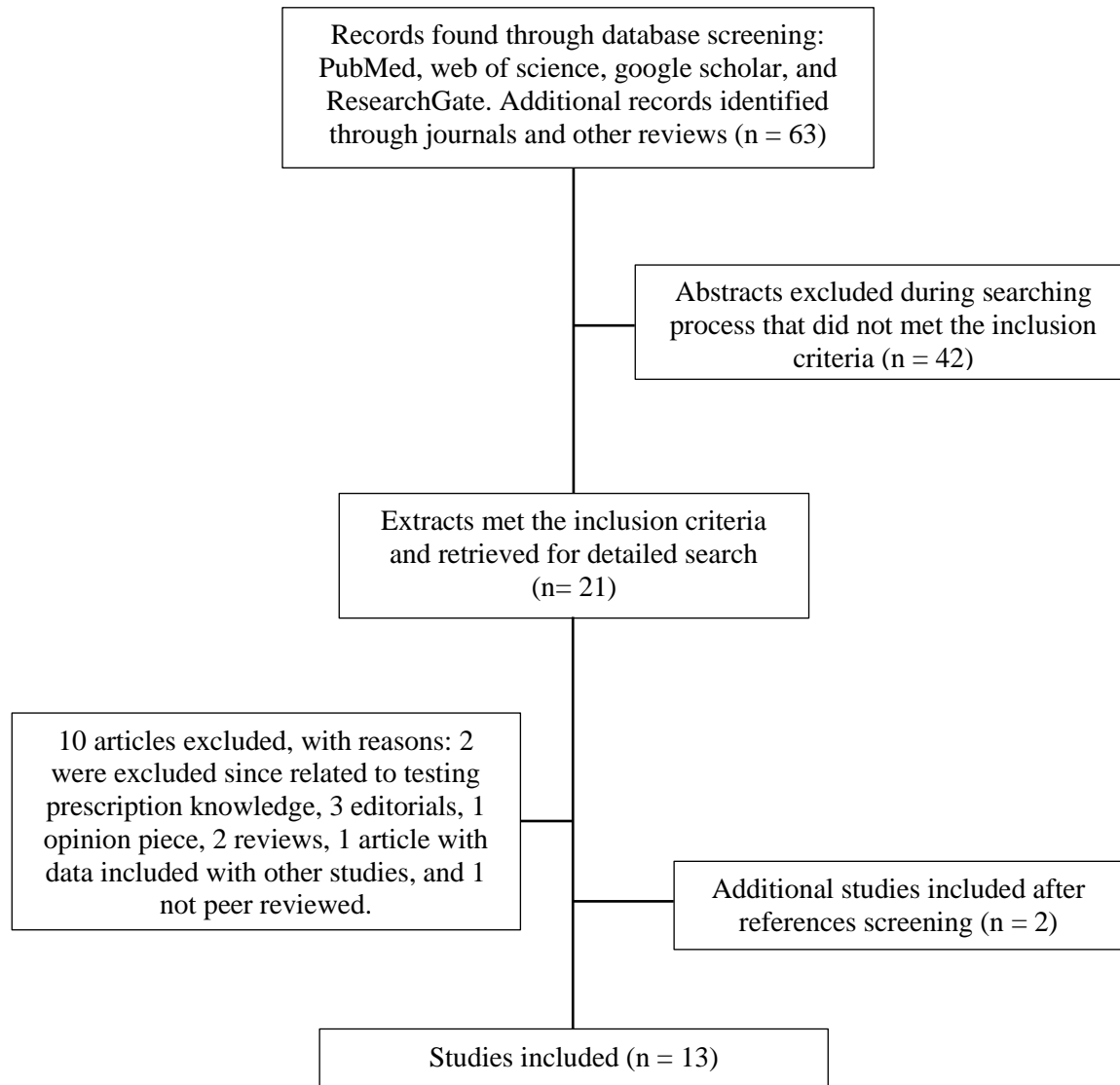
Statistical analysis

Statistical analyses were performed using the software Review Man 5.3, for Windows. Percentage meta-analyses were conducted to analyze pooled proportions (with 95% confidence interval) of drug self-medication for all included studies. The chi-squared test and the I^2 were used to estimate the degree of heterogeneity across studies.

RESULTS AND CONCLUSION

Literature search results

The database search recruited 63 publications for assessment. A number of 42 publications were excluded during searching process that did not met the inclusion criteria. The results retrieved from the search were analyzed separately yielding 21 articles met the inclusion criteria and retrieved for detailed search. Through this phase, 10 more articles were excluded, with reasons: 2 were excluded since related to testing prescription knowledge, 3 editorials, 1 opinion piece, 2 reviews, 1 article with data included with other studies, and 1 not peer reviewed. However, additional two studies included after references screening, with a final of 13 studies included [Figure 1].

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┌─────────────────────────────────┐
│ Records found through database  │
│ screening: PubMed, web of       │
│ science, google scholar, and    │
│ ResearchGate. Additional records│
│ identified through journals and │
│ other reviews (n = 63)          │
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                │────────│ Abstracts excluded during   │
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        │ Extracts met the inclusion  │
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│ 10 articles excluded, with   │
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│ since related to testing     │
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│ 2 reviews, 1 article with    │────────│ Additional studies included │
│ data included with other     │        │ after references screening  │
│ studies, and 1 not peer      │        │ (n = 2)                     │
│ reviewed.                    │        └─────────────────────────────┘
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        │ Studies included (n = 13)   │
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Figure 1. Flow diagram of article selection progression

The 13 studies were conducted in 6 cities and involved 4741 population. The majority of the studies (7 out of 13) included in this review were conducted in Tripoli city. Almost all (12 out of 13) of the included studies were of prospective cross-sectional design (Table 1). Around 9 of the 13 studies included questioner-based studies. The remaining 4 studies were based on; 3 studies were prescription analysis, and one study used simulated patient method.
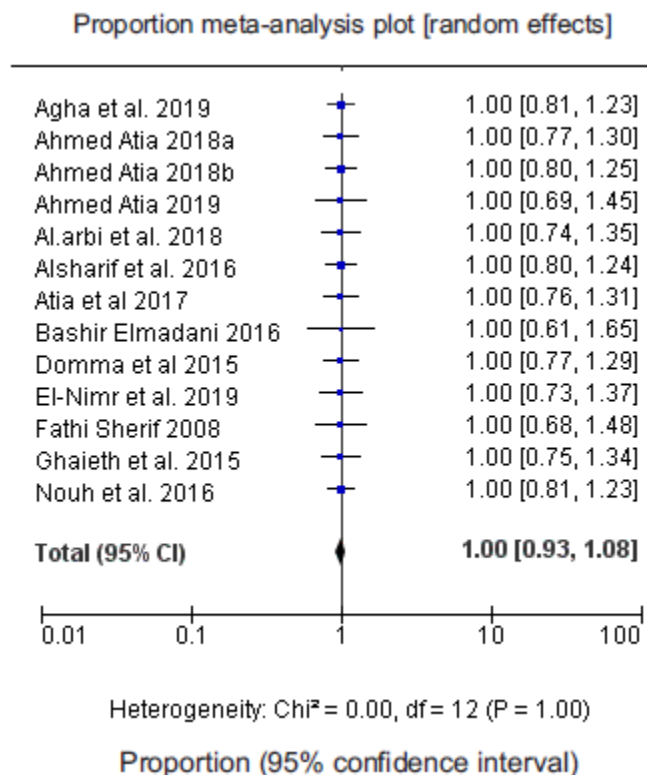
Table 1. Characteristics of the included studies

Authors	Study location	Study design	Sample size	Statistics used	Prevalence of self-medication or consumption rate	Type of drugs most commonly consumed or prescribed
Fathi Sherif 2008	Tripoli and Al-zawia	Prospective, questionnaire-based cross-sectional	700 prescription	Bivariate analysis	25%	Analgesics
Bashir Elmadani 2016	Misurata	Prospective, one-stage random sampling method	400 women	Chi-square	15.3%	Antibiotics
Atia et al 2017	Tripoli	Prospective using simulated client method	120 pharmacists and physicians	Chi-square and Fisher's exact tests	53.5%	Antibiotics
Ghaieth et al. 2015	Benghazi	Prospective, questionnaire-based cross-sectional	363 questioner students	Descriptive statistics	46%	Antibiotics
Domma et al 2015	Messellata	Retrospective, observational hospital-based study	200 children	Descriptive statistics	58.5%	Antibiotics
Agha et al. 2019	Tripoli	Prospective, cross sectional survey	620 students	t-test	88.6%	Analgesics
El-Nimr et al. 2019	Misurata	Prospective, cross-sectional design followed by an intervention approach	280 patients	Chi-square	39.5%	Antibiotics
Ahmed Atia 2018a	Tripoli	Prospective, questionnaire-based cross-sectional	582 adult patients	Descriptive statistics	56.2%	Antibiotics
Ahmed Atia 2019	Tripoli	Prospective, questionnaire-based cross-sectional	216 prescription	Descriptive statistics	27.6%	Analgesics
Alsharif et al. 2016	Tripoli,	Prospective, questionnaire-based cross-sectional	478 community pharmacists	Descriptive statistics	80%	Not specified
Al.arbi et al. 2018	Al.asaba	Prospective, questionnaire-based cross-sectional	56 patients	Descriptive statistics	41.7%	Insulin
Nouh et al. 2016	Benghazi,	Prospective, prescriptions-based study	421 prescriptions	Descriptive statistics	88.3%	Anti-diarrheal
Ahmed Atia 2018b	Tripoli	Prospective, questionnaire-based cross-sectional	305 students	Descriptive statistics	76.6%	Antibiotics

Incidence of self-medication and the commonly used type of drugs

This is the first study to provide pooled estimates of the level of drug dispensing without prescription in Libya. Even with regional variations, providing drugs without prescription remains high worldwide [5]. The prevalence of self-medication of drugs in the Libyan community ranging from 25% to 88.6% in Tripoli [20,21], 46% to 88.3% in Benghazi [16,22], 39.5% in Misurata [23], and 41.7% in Al-Asaba [24]. On the other hand, medication without prescription was given to 8.5% children in Messellata [25], mostly consisting of penicillins. In addition, 15.3% of the women self-medicated during pregnancy [15].

The overall pooled estimation of self-medication of drugs was 53.6% (95% CI: 0.93% - 1.08%), and there was a low heterogeneity and the P-value of the entire population sampled was found to be = 1.000 (df = 12) (Figure 2). This local estimate was similar to earlier estimate reported in Egypt (65%, 95% CI 56–74) and Bosnia (58%, 95% CI 49–66) [26,27]. However, is was lower than estimates in India (66%, 95% CI 60–72) and Brazil (74% 95% CI 65–82) [28,29]. In general, self-medication with non-prescription drugs was more common in previous studies in Saudi Arabia (81% 95% CI 73–89) [30], Syria (87%, 95% CI 82–91) [31], and Ethiopia (77% 95% CI 62–92) [32].

Proportion meta-analysis plot [random effects]

Agha et al. 2019	1.00 [0.81, 1.23]
Ahmed Atia 2018a	1.00 [0.77, 1.30]
Ahmed Atia 2018b	1.00 [0.80, 1.25]
Ahmed Atia 2019	1.00 [0.69, 1.45]
Al.arbi et al. 2018	1.00 [0.74, 1.35]
Alsharif et al. 2016	1.00 [0.80, 1.24]
Atia et al 2017	1.00 [0.76, 1.31]
Bashir Elmadani 2016	1.00 [0.61, 1.65]
Domma et al 2015	1.00 [0.77, 1.29]
El-Nimr et al. 2019	1.00 [0.73, 1.37]
Fathi Sherif 2008	1.00 [0.68, 1.48]
Ghaieth et al. 2015	1.00 [0.75, 1.34]
Nouh et al. 2016	1.00 [0.81, 1.23]
Total (95% CI)	**1.00 [0.93, 1.08]**

0.01   0.1   1   10   100

Heterogeneity: Chi² = 0.00, df = 12 (P = 1.00)

Proportion (95% confidence interval)

Figure 2 Results of meta-analysis. Subgroup analysis of studies describing the incidence of self-medication gathered by geographical distribution.

Outcomes of this study also highlight some concerns about the safe dispensing use of antibiotics. Seven out of the 13 studies reported data on self-medication for antibiotics without prescription. The records ranged from 15.3% (95% CI 0.61–1.65) in Misurata [15] to 76.6% (95% CI 0.80–1.25) in Tripoli [19]. The pooled estimate was 49.3%. Similarly, in previous study, the proportion of non-prescription supply of antibiotics based on pharmacy staff recommendation was 58% (95% CI 48–68) [33]. This finding has a significant effect on public health safety, mostly for the risk of emerging of microbial resistance.

Reports from earlier studies have stated that there were several causative factors to the prevalent phenomenon of self-medication in countries such as Libya: lack of access to healthcare services, easy access of medicines without prescription, and the rising behaviors of dispensing drugs to

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control nervousness or other mental disorders [34]. In addition, we found some studies stated low incidence of self-medication, conceivably this might be due to the occurrence of more distinct and specific enclosure criteria to choose subjects.

The current study has some limitations that should be stated. Firstly, our study was limited by a lack of data from many cities in the country. In addition, in cities where data were available, a small sample size were used which may not necessarily reflect the extent of non-prescription use of medicines across the country. Thus, our results may have over or underrepresented the concrete range of non-prescription supply of medicines. Furthermore, the findings of our study did not consider the impact of any local regulatory policies targeted at diminishing the supply of drugs without prescription or self-medication, which was implemented after the publication of the included articles and has caused decreasing of self-medication of non-prescribed medications.

CONCLUSION

Regardless of sociodemographic characteristics of the study participants, we attempted to analyze 13 original studies addressing self-medication practice in Libya. From this, 4741 participants were included for pooled estimation of primary outcome measures. Since self-medication is a common phenomenon in low-income countries like Libya where resources are often scarce, we tried to include all eligible studies for better power of estimation and ease of subgroup analyses.

Based on our findings, its clearly conveyed that medicines are repeatedly dispensed without prescription in many cities around the country. This misuse of medicines, particularly antibiotics, could harm patient safety and increase the chance of development and spread of antibiotic resistance. Considerable attention on this drug-practice concern is advisable with the emphasize on enforce laws and policies that could limit the self-use of drugs without prescription. In addition, implementing governmental initiatives that enhance physician education of appropriate medication use, and to increase the awareness of citizens to the risks related to this issue is needed.

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