



The Open Public Health Journal

Content list available at: <https://openpublichealthjournal.com>



RESEARCH ARTICLE

Prevalence of Self-medication and its Influence in the Labor Force in Rural Hlaing Tharyar, Yangon, Myanmar

Moe Thuzar¹ and Pyae Linn Aung^{2,*}

¹Faculty of Public Health, Mahidol University, Bangkok, Thailand

²Myanmar Medical Association, Yangon, Myanmar

Abstract:

Background:

As self-medication is becoming the most familiar and preferred type of medical care in developing countries, this study was designed to measure the prevalence of self-medication and its influence on the labor force in rural areas of Hlaing Tharyar Township, Yangon, Myanmar.

Methods:

A cross-sectional study using structured questionnaires was conducted among 250 laborers during April 2015.

Results:

The prevalence of self-medication among the labor force was (89.2%) in which 64.0% had poor knowledge, 56.8% had poor perception, and 68.8% received poor social support for self-medication practices. A multiple logistic regression analysis revealed that three variables influenced self-medication practices: (1) decision-making role for the treatment of illness (odds ratio [OR] = 3.79, 95% confidence interval [CI] = 1.7–12.38); (2) poor perception (OR = 5.33, 95% CI = 1.66–17.08); and (3) poor social support (OR = 4.86, 95% CI = 1.61–14.63).

Conclusion:

These findings indicate the need for health education intervention and behavior change communication training for promoting rational drug use among this rural labor force.

Keywords: Self-medication, Prevalence, Factors, Labor force, Rural Hlaing Tharyar, Myanmar.

Article History

Received: October 04, 2018

Revised: January 31, 2019

Accepted: February 07, 2019

1. INTRODUCTION

The use of drugs or medicines by patients to self-treat diseases or symptoms or the use of previously-prescribed medicine, and taking medication prescribed by unlicensed traditional and/or health staffs are defined as self-medication [1]. They may account for drug resistance, delay proper treatment and mask diseases, which can lead to life-threatening cases [2]. Despite the attempts of developing countries to achieve universal health care coverage, mainly for underserved populations, self-medication using Over-The-Counter (OTC) drugs is becoming the most familiar and preferred type of medical care. It is estimated that over 92% of all purchasers used at least one OTC medicine and 55% have used more than one in a year [3]. In the South-East Asia Region, self-medica-

tion is a progressively practiced phenomenon and the prevalence is estimated to be within the range of 12.7% to 95% [4, 5]. Nepal, India and Pakistan have reported prevalence estimates of around 50% [6 - 8]. In Sri Lanka, almost 64% of the families from an urban area had practiced self-medication [9]. It was found that self-medication was a low-cost alternative especially for mild illnesses when a person was dissatisfied with available medical care.

The popularity of self-medication is due to its social acceptability and low cost of treatment. Reliance on self-medication and traditional practitioners was predominant among people in rural areas and among the lower social classes for whom modern health services provided by the government were not affordable and were not acceptable [10]. In 2013, only a small portion (5%) of drug stores was handled by proper pharmacists, while almost 75% of outlets were assigned by

* Address correspondence to this author at the Myanmar Medical Association, Yangon, 11222, Myanmar; Tel: +95-9-5187520; E-mail: pyaelinnag@gmail.com

other non-experts [11]. Self-medication practices among Myanmar villagers were highly prevalent and practiced by 97.8% of respondents. In addition, most of the respondents (83.3%) were dissatisfied with costs, waiting time, nurses' behavior and services given at hospital or health center [10]. Low income groups used the retail pharmacy, where treatments were provided by neither pharmacists nor trained health personnel. In a qualitative approach study conducted in a peri-urban area of Yangon City, Myanmar, participants were familiar with frequently advertised drugs and thought that buying drugs from drug stores was the most convenient way. Moreover, going to clinics was viewed as the last option, as they did not like the repeated appointments and long waiting time [12].

The study area, Hlaing Tharyar Township, is a peri-urban area in the northern part of Yangon city. It has families of different socio-economic-demographic classes among the permanent residents, as well as a transient population from other parts of the country. Therefore, population of the township, particularly the labor force, has increased vastly due to the inward migration from other townships, mainly in search of better job opportunities in the industrial zone. The township comprises 20 wards in the urban area and 18 villages in the rural area. Health care is provided by one township hospital, one station hospital, one urban health center, one Rural Health Center (RHC) and five sub RHCs as government sectors. Although the sanctions are nearly full, some doctors and midwives are away for further study so there is a shortage of human resources and these facilities may not cover all the needs for health in the community [12]. There were very few studies about self-medication practices among the labor force in Myanmar and not much is known about its major contributing factors [13]. Therefore, this study will serve as baseline information for those who are interested in doing research on self-medication practices in Myanmar. Moreover, this study will help to explain the reasons for self-medication practices among the labor force and propose a new way of

thinking to formulate a proper strategy for promoting rational use of drugs in their society.

2. MATERIALS AND METHODS

The present study was conducted in rural Hlaing Tharyar, Yangon Division, Myanmar. According to the National Population Commission Census of 2014, this area is inhabited by 205,672 individuals, 89% of whom are male and 11% female [14]. A structured questionnaire was used as the data collection instrument. It was initially developed in English and then translated into Myanmar by back-translation method. Prior to commencing the main study, the questionnaire was pre-tested by administering it to 30 Myanmar nationals residing in Bangkok, who were asked to provide feedback on the clarity of language used, item sequence and other aspects. Next, the Cronbach's alpha coefficient (α) was calculated for all instrument scales, whereby 0.802 was obtained for knowledge about self-medication, 0.807 for perception related to self-medication and 0.783 for social support for self-medication.

The population of interest for this investigation comprised of both males and females of working age (18 to 60 years) residing in rural Hlaing Tharyar. The cluster sampling technique was adopted to select 10 of the 17 villages located in this region. Next, 25 individuals were randomly selected from each of these 10 sampled villages (with 10 respondents aged 18–29, 10 aged 30–49, and 5 aged 50–60 years), resulting in the desired sample size of 250 participants. To increase the participation rate, the households meeting the study inclusion criteria were informed of the data collection at least one day in advance. If the randomly chosen household had no working-age members, another respondent was identified and recruited. All study participants took part in individual face-to-face interviews and completed the questionnaires. After cleaning, the data was encoded and entered into Epidata 3.1 before analyzing the responses to each part of the questionnaire using Statistical Package for the Social Sciences (SPSS), version 18 (Fig. 1).

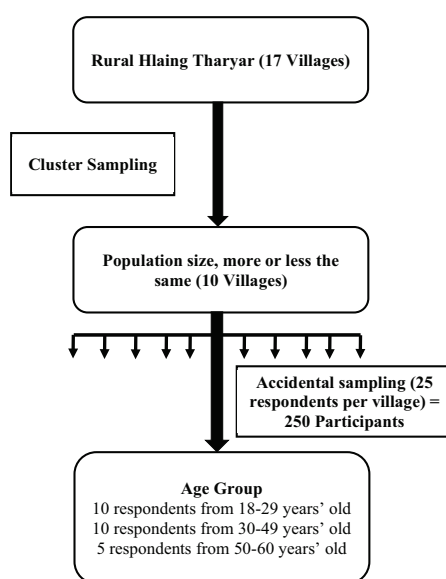


Fig. (1). Flow chart of sampling procedure.

3. RESULTS

Analysis of the 250 participants' survey responses revealed that 89.2% of the sample (223 participants) engaged in self-medication practices while the remaining 10.8% did not, as shown in Table 1. In the former group, self-medication was mostly used for treating headache (89.2%), followed by fever (87.9%) and cough (80.7%). Around half of the respondents practiced self-medication for muscle pain (57.8%), sore throat (55.2%), minor injuries (53.8%) and running nose (50.2%). Similarly, 37.2%, 36.8%, 36.3% and 34.5% reported self-medicating due to flu, allergic rash, diarrhea and stomachache, respectively. Finally, about 10% of the sample resorted to self-medication when suffering from mouth ulcers, earache and asthma.

According to the general sample characteristics reported in Table 2, 60.0% of the respondents are aged ≤ 35 years, and 74.4% are married, while both genders are equally represented. In addition, 72% of the participants live in households with fewer than six members, and 78.4% are educated at the high school level or below. With respect to occupation, 63.2% of the sample reported working more than 8 hours per day, while 53.2% earn no more than 130,000 Kyats (~85USD) per month. Nearly half (54.4%) of the sample stated that their living expenses exceeded their individual income. Moreover, 76.8% of the sample noted that they determined the best way to treat an illness, while the remaining 23.2% left such decisions to family members or healthcare personnel. Yet, 64.0% of the respondents stated that their self-medication knowledge was poor, while the remaining 36.0% rated it as good. In addition, 56.8% of the participants had poor level of perception related to self-medication, drug use, health services and health

personnel, while the remaining 42.3% rated it as good. The results also showed that 68.8% of the sample received poor social support from their community for self-medication.

The associations were computed between self-medication practice and female ($p=0.02$), lower education ($p=0.03$), working more than 8 hours per day ($p=0.011$), less income ($p=0.036$), not enough income for living expenses ($p=0.022$) and decision making on treatment of illness ($p=0.000$). The female respondents were 2.7 times more likely to practice self-medication than males (OR= 2.72, 95% CI= 1.14-6.47). The respondents who had high school and lower education were 2.8 times more likely to practice than those with higher education (OR=2.88, 95% CI= 1.25-6.64). Moreover, the respondents who worked more than 8 hours per day practiced self-medication about 3 times more than those who worked equal to or less than 8 hours. It was also found that low income groups were 2.5 times more likely to practice self-medication than higher income groups, and those making self-decision on treatment of illness were 3 times more than the other decided by family members or health personnel. Moreover, significant associations were found between self-medication and knowledge ($p=0.008$), perception ($p=0.001$) and social support ($p=0.014$). The respondents with poor knowledge levels about self-medication were 2.9 times more likely to practice self-medication than those who had fair and good knowledge (OR= 2.93, 95% CI= 1.29-6.63). The respondents who had poor perception related to self-medication practiced it 4.3 times more than those who had good levels of perception (OR= 4.38, 95% CI= 1.78-10.79). It was also found that the respondents who received poor social support practiced self-medication 2.6 times more often than those who received good support (OR= 2.68, 95% CI= 1.19-6.00).

Table 1. Number and percentage distribution of self-medication practice of the 250 labor force

Self-medication	Number (n)	Percent (%)
Self-medication first to treat illness		
Yes	223	89.2
No	27	12.1
Type of illness among 223 participants who have practiced self-medication		
Headache	199	89.2
Fever	196	87.9
Cough	180	80.7
Muscle aches/ pain	129	57.8
Sore throat	123	55.2
Minor injuries	120	53.8
Running nose	112	50.2
Flu	83	37.2
Allergic rash	82	36.8
Diarrhea	81	36.3
Stomachache	77	34.5
Itchy eyes	47	21.1
Mouth ulcer	35	15.7
Asthma	27	12.1
Earache	25	11.2
Others e.g. Arthritis, Herpes, Eczema	11	4.9

Table 2. Association between general characteristics and self-medication practice among 250 labor force

General Characteristics	n (%)	Self-medication (%)		OR	95% CI	p-value
		Yes	No			
Age group (years)						0.454
≤ 35	150 (60.0)	88.0	12.0	1.00		
> 35	100 (40.0)	91.0	9.0	1.38	0.59-3.20	
Gender						0.020*
Male	123 (49.2)	84.6	15.4	1.00		
Female	127 (50.8)	93.7	6.3	2.72	1.14-6.47	
Marital status						0.670
Married	186 (74.4)	88.7	11.3	1.00		
Single/ Divorced/ Widowed	64 (25.6)	90.6	9.4	1.23	0.47-3.19	
Total number of family member (persons)						0.479
≤ 5	180 (72.0)	88.3	11.7	1.00		
> 5	70 (28.0)	91.4	8.6	1.41	0.54-3.65	
Education						0.010*
College/ Bachelor	54 (21.6)	79.6	20.4	1.00		
Primary/ Secondary/ High	196 (78.4)	91.8	8.2	2.88	1.25-6.64	
Occupation						0.446*
Employed	199 (79.6)	88.4	11.6	1.00		
Dependent	51 (20.4)	92.2	7.8	1.54	0.51-4.66	
Working hours per day (n=210)						0.011*
≤ 8	52 (20.8)	78.8	21.2	1.00		
> 8	158 (63.2)	91.8	8.2	2.99	1.25-7.18	
Average income per month (Kyats) (n=210)						0.036*
> 130,000	65 (26.0)	81.5	18.5	1.00		
≤ 130,000	133 (53.2)	91.7	8.3	2.51	1.04-6.05	
Income status for living/ expense (n=210)						0.022*
Enough with/ without saving	62 (24.8)	80.6	19.4	1.00		
Not enough, no debt/ with debt	136 (54.4)	91.9	8.1	2.73	1.13-6.58	
Decision making role on treatment of illness						0.006*
Family member/ health personnel	58 (23.2)	79.3	20.7	1.00		
Self-decision	192 (76.8)	92.2	7.8	3.08	1.35-7.03	
Knowledge about self-medication						0.008*
Good	90 (36.0)	82.2	17.8	1.00		
Poor	160 (64.0)	93.1	6.9	2.93	1.29-6.63	
Perception related to self-medication						0.001*
Good	108 (42.3)	81.5	18.5	1.00		
Poor	142 (56.8)	95.1	4.9	4.38	1.78-10.79	
Social support for self-medication						0.014*
Good	78 (31.2)	7.6	17.9	1.00		
Poor	172 (68.8)	92.4	82.1	2.68	1.19-6.00	

*Significance at $P < 0.05$, Degree of freedom for Chi-square test=1. CI: Confidence interval, OR: Odds ratio

Table 3. Multiple logistic regression analysis of factors affecting self-medication among 250 labor force

Variables	Unadjusted		Adjusted*		p-value
	OR	95% CI	OR	95% CI	
Decision making for treatment of illness					0.027*
Family member/ health person	1.00		1.00		
Self-decision	3.08	1.35-7.03	3.79	1.17-12.38	
Perception related to self-medication					0.005*

(Table 3) contd.....

Variables	Unadjusted		Adjusted*		p-value
	OR	95% CI	OR	95% CI	
Good/ Fair	1.00		1.00		
Poor	4.38	1.78-10.79	5.33	1.66-17.08	
Social support for self-medication					0.005*
Good/ Fair	1.00		1.00		
Poor	2.68	1.19-6.00	4.86	1.61-14.63	

*Adjusted for age, gender, education, working hours, income and decision making on treatment of illness, knowledge about self-medication, perception related to self-medication and social support for self-medication

*Significance at $P < 0.05$, OR: Odds ratio (Unadjusted and Adjusted)

From Table 3, after adjusted multiple logistic regressions for variables in the model, the results showed that three variables were statistically associated with self-medication practice: decision making for treatment of illness (adjusted OR = 3.79, 95% CI = 1.17-12.38), perception related to self-medication (adjusted OR = 5.33, 95% CI = 1.66-17.08), social support for self-medication (adjusted OR = 4.86, 95% CI = 1.61-14.63).

4. DISCUSSION

Over several decades, the high prevalence of self-medication has been reported to exist all over the world, but particularly in developing countries [15]. This study reports a prevalence rate of 89.2% among the Myanmar labor force, a smaller rate than that found by another study conducted among Myanmar villagers (98%) [16]. Both are higher than the rates in nearby countries like South India (71%), Malaysia (62.7%), and Nepal (59%) [17, 18]. However, any significant rate of self-medication (>50%) is likely to result in a health challenge anywhere in the world [19]. The variations among rates may be attributable to different socio-economic factors, such as existing prevalence, cultural beliefs, and government drug-control regulations. They might also be due to individual perceptions of, for instance, cheapness, saving of time, ease of access, and the mildness of the illness, as well as previous experience. A study in Ethiopia found the cost of treatment to be an important motivation for self-medication [20]. Self-medication practices vary with specific diseases and different severities [21]. This study found that most of the respondents self-medicate for headache and fever, with a smaller number self-medicating for coughs and muscle pain. These results compare well with those of an Ethiopian study, as almost all of the respondents practiced self-medication for trivial illnesses like headache (60%) [20]. Another study, in India, found that more participants (73.2%) self-medicated for headache and body ache than for any other illnesses [22]. Pain was found to be the most common reason to self-medicate, with allergies and diseases of the respiratory tract next [23].

Of ten general variables, six were significantly associated with self-medication: gender, education, daily working hours, personal income, income status, and ability to decide on a treatment for illness. The results revealed that female respondents are 2.7 times more likely than male respondents to practice self-medication. Studies in Sri Lanka, Nepal, and South India, however, reported the practice to be more prevalent in males than in females [24, 25], perhaps because

females are more dependent on males in those societies. In Myanmar’s female labor force, economic problems and lack of time contribute more to the women’s greater indulgence in self-medication. Although no association was found between age groups and self-medication practice, the results showed that the practice gradually decreases with increasing age. This might be because an aging person, with experience of previous episodes, would, in general, be more likely to visit a medical doctor [17]. This study reports that the practice of self-medication among groups with lower education (high school and below) is 2.8 times more than it is among those with higher education. Many studies have proved that the education level of the participants influences the likelihood of practicing self-medication [7, 18, 26]. Other studies contradict these results, finding that participants with higher education are more likely to self-medicate, possibly because they can read and understand the descriptions and dosages printed on drugs packages [23, 27].

This study found no association between respondents’ occupations and their self-medication practices. However, those with low individual monthly income (130,000 Kyats or less), earning insufficient for living expenses, self-medicate more readily than higher income groups. One study in Mexico revealed a greater likelihood for low-income respondents to self-medicate [28]. This association between income and self-medication has an economic basis. Most laborers and factory workers in the study area are very poor; even though they work hard for more than eight hours daily, their income is very low. Because they can save time and money by avoiding private clinics and hospitals except in emergency, their obvious first resort is to try self-medication to solve their health problems. Furthermore, decisive respondents are more likely to self-medicate than those whose decisions are made by significant others, such as family members and healthcare personnel. This trend possibly exists because the respondents in this study rely on their own decisions rather than allowing others to make decisions for them.

This study found a generally poor knowledge of self-medication. Most respondents lack knowledge of important facts including drug dosage, the adverse effects of drugs, and the dangers of self-medication. Those with a poor knowledge level were found to practice self-medication 2.9 times more than those with fair or good knowledge (OR= 2.93, 95% CI= 1.29-6.63). A study in Ethiopia found similar results, with more than two thirds of the respondents having no preliminary knowledge of the adverse effects of over-the-counter drugs

[29]. This finding highlights their need for health and drug education. One key factor is the cost of self-medication, considered by all as reasonable and affordable. One of the studies in Brazil concluded that people tend to be more cautious of self-medication and to practice it less because of a lack of medical knowledge [30]. Nevertheless, multiple logistic regression analysis shows that the knowledge level of the respondents is not significant.

The study shows that perception of self-medication is strongly related to self-medication practice. Respondents with poor perception self-medicated 4.3 times more than those with moderate or good perception (OR= 4.38, 95% CI= 1.78-10.79). Multiple logistic regression analysis shows that perception regarding self-medication is also statistically associated with self-medication practice ($p < 0.05$). Of 250 respondents, more than half (56.8%) had poor perception related to self-medication and only 14% had a good perception level. Many strongly perceived self-medication as a time-saving, economical approach to minor illness and as a temporary measure. These findings align with the World Health Organization's statement that self-medication may offer a reasonably-priced, acceptable option for relieving common non-serious illnesses [16]. Other studies confirm that these factors serve to influence self-medication practices among the community [24].

The study revealed that 68.8% had poor levels of social support for self-medication. The respondents mainly received mental support, financial support, and free drugs from their family members. A study in Jordan concluded that one main factor for choosing self-medication was receiving suggestions from drug vendors, neighbors, friends, or family members [31]. Also, from the psychological perspective, comparing with others from local surroundings affects people's well-being [32]. This study showed that to obtain information about drugs, patients usually asked drug sellers and health personnel, followed by family members. A study in Ethiopia showed that pharmacists, rather than other health care personnel, are a major source of information in the community regarding self-medication [16]. Another report from a Nigerian study [33] showed that the main channels of information and the usual sources of medication were local drug sellers who are usually closer to the grassroots, probably due to the relatively limited number of registered pharmacists and medical doctors in developing countries. It was found that the respondents who received poor social support practiced self-medication 2.6 times more often than those who received fair and good support (OR= 2.68, 95% CI= 1.19-6.00). The association was still significant with p -value 0.005 after analyzing with multiple logistic regressions. The result was in line with the study among students in Thailand that, the less social support received, the more self-medication is practiced. This was possibly due to exceptionally reasonable prices of self-medication and availability of pharmacy shops [34].

CONCLUSION

In contrast, the study proved that there is an alarming situation with respect to self-medication practice along with its associated factors among the rural labor force. Therefore, we

would like to suggest that health education and topic discussions about responsible self-medication practices in working environments and factories should be promoted. Again, behavior change communication trainings and programs should be provided in order to change workers' misunderstandings and doubts concerning self-medication. Implementation of health personnel involvement programs should be supported with coordination and collaboration of responsible organizations and community people. It is also necessary to provide the workers with real information through interpersonal communication in addition to mass media sources in order to explore the correct information.

ETHICAL APPROVAL AND CONSENT TO PARTICIPATE

This study was reviewed and approved by The Ethical Committee of Faculty of Public Health, Mahidol University (COA. No. MUPH 2015-075).

HUMAN AND ANIMAL RIGHTS

No humans/animals were used for the studies that are basis of this research.

CONSENT FOR PUBLICATION

The researcher asked for the consent from the respondents before commencing the study.

CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

FUNDING

The authors received no financial support for this study, authorship, and/or publication of this article.

ACKNOWLEDGEMENTS

Declared none.

REFERENCES

- [1] World Health Organization. WHO: Guidelines for the regulatory assessment of medicinal products for use in self-medication 2000.
- [2] American Pharmaceutical Association. Handbook of non-prescription drugs. 1996.
- [3] Wertheimer AI, Serradell J. A discussion paper on self-care and its implications for pharmacists. *Pharm World Sci* 2008; 30(4): 309-15. [<http://dx.doi.org/10.1007/s11096-007-9187-y>] [PMID: 18202902]
- [4] Kasilo OJ, Nhachi CF, Mutangadura EF. Epidemiology of household medications in urban Gweru and Harare. *Cent Afr J Med* 1991; 37(6): 167-71. http://hdl.handle.net/10520/AJA00089176_362 [PMID: 1790560]
- [5] Figueiras A, Caamaño F, Gestal-Otero JJ. Sociodemographic factors related to self-medication in Spain. *Eur J Epidemiol* 2000; 16(1): 19-26. [<http://dx.doi.org/10.1023/A:1007608702063>] [PMID: 10780338]
- [6] Shankar PR, Partha P, Shenoy N. Self-medication and non-doctor prescription practices in Pokhara valley, Western Nepal: A questionnaire-based study. *BMC Fam Pract* 2002; 3(1): 17. [<http://dx.doi.org/10.1186/1471-2296-3-17>] [PMID: 12236905]
- [7] Deshpande SG, Tiwari R. Self medication-a growing concern. *Indian J Med Sci* 1997; 51(3): 93-6. [PMID: 9355716]
- [8] Zafar SN, Syed R, Waqar S, *et al.* Self-medication amongst university students of Karachi: prevalence, knowledge and attitudes. *J Pak Med*

- Assoc 2008; 58(4): 214-7.https://ecommons.aku.edu/pakistan_fhs_mc_chs_chs/29 [PMID: 18655436]
- [9] World Health Organization. Public-private roles in the pharmaceutical sector: Implications for equitable access and rational drug use. *Health Economics and Drugs Series* 1997; p. 005.
- [10] Aung M. Self-medication Among Myanmar Villagers Thematic paper for the Degree of Master of Public Health. Mahidol University 1999.
- [11] Ministry of Health. Health in Myanmar 2013 [Internet]. MOH publication; 2014. Available from: <http://ebookbrowse.net/he/health-in-myanmar-2013>
- [12] Township Health Profile. Annual report of community public health in Hlaing Thar Yar Township, Myanmar 2014.
- [13] James H, Handu SS, Al Khaja KA, Ootom S, Sequeira RP. Evaluation of the knowledge, attitude and practice of self-medication among first-year medical students. *Med Princ Pract* 2006; 15(4): 270-5. [<http://dx.doi.org/10.1159/000092989>] [PMID: 16763393]
- [14] Ministry of Immigration and Population. Population and Housing Census of Myan 2014.https://myanmar.unfpa.org/sites/default/files/resource-pdf/Yangon_Hlinethaya_en.pdf
- [15] Ezechukwu CC, Egbuonu I, Chukwuka JO. Drug treatment of common symptoms in Nnewi South Eastern Nigeria: What mothers do? *Niger J Clin Pract* 2005; 8: 1-3. [PMID: 16392447]
- [16] World Health Organization. Report of the WHO Expert Committee on National Drug Policies: Geneva: 19-23 June 1995: Contribution to Updating the WHO Guidelines for Developing National Drug Policies 1995.
- [17] Badiger S, Kundapur R, Jain A, *et al*. Self-medication patterns among medical students in South India. *Australas Med J* 2012; 5(4): 217-20. [<http://dx.doi.org/10.4066/AMJ.2012.1007>] [PMID: 22848313]
- [18] Balamurugan E, Ganesh K. Prevalence and pattern of self-medication use in coastal regions of South India. *Br J Med Pract* 2011; 4(3)
- [19] Shaghghi A, Asadi M, Allahverdipour H. Predictors of self-medication behavior: a systematic review. *Iran J Public Health* 2014; 43(2): 136-46. [PMID: 26060736]
- [20] Worku S, Mariam AG. Practice of self-medication in Jimma Town, Ethiopia. *Ethiop J Health Dev* 2003; 17(2): 111-6.
- [21] Zhao Y, Ma S. Observations on the prevalence, characteristics, and effects of self-treatment. *Front Public Health* 2016; 4: 69. [<http://dx.doi.org/10.3389/fpubh.2016.00069>] [PMID: 27148515]
- [22] Lal V, Goswami A, Anand K. Self-medication among residents of urban resettlement colony, New Delhi. *Indian J Public Health* 2007; 51(4): 249-51. [PMID: 18232170]
- [23] Aqeel T, *et al*. Prevalence of self-medication among urban and rural population of Islamabad, Pakistan. *Trop J Pharm Res* 2014; 13(4): 627-33. [<http://dx.doi.org/10.4314/tjpr.v13i4.22>]
- [24] Kulkarni PK, Khan M, Chandrasekhar A. Self-medication practices among urban slum dwellers in South Indian city. *Int J Pharma Bio Sci* 2012; 3(3): 81-7.
- [25] Shveta S, Jagmohan S. A study of self-medication pattern in Punjab. *Indian J Pharm Pr* 2011; 4: 42-6.
- [26] Yuefeng L, Keqin R, Xiaowei R. Use of and factors associated with self-treatment in China. *BMC Public Health* 2012; 12: 995. [<http://dx.doi.org/10.1186/1471-2458-12-995>] [PMID: 23158841]
- [27] Sajith M, Suresh SM, Roy NT, Pawar D. Self-Medication Practices Among Health Care Professional Students in a Tertiary Care Hospital, Pune. *Open Public Health J* 2017; 10(1) [<http://dx.doi.org/10.2174/1874944501710010063>]
- [28] Pagan JA, Ross S, Yau J, Polsky D. Self-medication and health insurance coverage in Mexico. *Health Policy* 2006; 75(2): 170-7. [<http://dx.doi.org/10.1016/j.healthpol.2005.03.007>] [PMID: 16338480]
- [29] Suleman S, Ketsela A, Mekonnen Z. Assessment of self-medication practices in Assendabo town, Jimma zone, southwestern Ethiopia. *Res Social Adm Pharm* 2009; 5(1): 76-81. [<http://dx.doi.org/10.1016/j.sapharm.2008.04.002>] [PMID: 19285292]
- [30] Corrêa da Silva MG, Soares MC, Muccillo-Baisch AL. Self-medication in university students from the city of Rio Grande, Brazil. *BMC Public Health* 2012; 12: 339. [<http://dx.doi.org/10.1186/1471-2458-12-339>] [PMID: 22568959]
- [31] Yousef AM, Al-Bakri AG, Bustanji Y, Wazaify M. Self-medication patterns in Amman, Jordan. *Pharm World Sci* 2008; 30(1): 24-30. [<http://dx.doi.org/10.1007/s11096-007-9135-x>] [PMID: 17562220]
- [32] Simandan D. Rethinking the health consequences of social class and social mobility. *Soc Sci Med* 2018; 200: 258-61. [<http://dx.doi.org/10.1016/j.socscimed.2017.11.037>] [PMID: 29301638]
- [33] Afolabi AO. Factors influencing the pattern of self-medication in an adult Nigerian population. *Ann Afr Med* 2008; 7(3): 120-7. [<http://dx.doi.org/10.4103/1596-3519.55666>] [PMID: 19253521]
- [34] Hnin KK. Self-medication Practices among Undergraduate Students in Bangkok. Thailand: Thematic paper for the Degree of Master of Public Health, Mahidol University 2010.