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Prevalence and practice of self-medication: A study among adult Bengali population from North 24 Parganas of West Bengal, India

CHHANDITA BASU*[1] AND SUTAPA CHAUDHURY[2]
[1]Junior Research Fellow (UGC-NET) and [2]Associate Professor
[1&2]Department of Anthropology, University of Calcutta, Kolkata (W.B.) India

ABSTRACT

The present study sought to examine the pattern and practice of self-medication in two distinct administrative locales of North 24 Parganas district of West Bengal, India. Data were collected from 218 participants of Bidhannagar Municipal Corporation under Barasat subdivision and 193 participants from Bandipur Gram Panchayat area under Barrackpore subdivision using structured schedules. The present study found a significant statistical difference ($p<0.05$) between the participant from Bidhannagar Muncipal Corporation (48.62%) and Bandipur Gram Panchayat (62.69%) practising self-medication. Bivariate non-parametric test was also done to found the influence of socio-demographic variables (age, sex, levels of education, monthly income) on the practice of self-medication. Participants from Municipal Corporation were found to prefer mostly allopathic medicines (52.83%) to self-medicate compared to increased use of homeopathy (57.09%) for Gram Panchayat area. All these variations could be ascertained to the fact that there lies significant statistical difference in education levels ($p<0.05$) and income status ($p<0.05$) among selected study participants from both these locales. The study showed pharmacists (42.45% in Municipal Corporation; 43.80% in Gam Panchayat) to be the most reliable source of information regarding the same. Unlike participants from Municipal Corporation area, who avail medicines mostly by telling the name of medicines (34.90%); Gram Panchayat participants were found to tell the symptoms (30.57%) for buying medicines. Self-medication was seen as alternative health-seeking behaviour to save time (34.90%) for Municipal Corporation while saving money (38.84%) remains the common reason to self-medicate for the other locale. The study further reported fever (23.58%) to the commonest symptoms to self –medicate for Municipal Corporation area. While headache and body pain (22.31%) remains the most frequent symptoms for participants practising self-medication in concerned Gram Panchayat area. The study, therefore, concludes self-medication as health-seeking behaviour alternative to institutionalised medical treatment. Choice to self-medication depends on different socio-demographic factors working in concert.

Key Words : Self-medication, North 24 parganas district, socio-demographic variables

INTRODUCTION

The term 'medication' refers to the act and usage of consuming medicines for prevention, diagnosis or treatment of diseases (Ahmed *et al.*, 2014). Self-medication, as a major form of self-

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care (Jain *et al.*, 2011), can be defined as obtaining and consuming one (or more) drugs without the advice of a physician either for diagnosis, prescription or surveillance of the treatment (Jain *et al.*, 2015, Montastruc *et al.*, 1997). It can also be defined as the consumption of non-prescription medicines by people on their own initiative (Jain *et al.*, 2015, Jamison *et al.*, 1999). The patients diagnose their own illness and buy a specific drug from medical shops to treat it. Person self medicate themselves by taking more or less than the recommended dose or frequency of drug administration and duration of therapy of drugs. It has been observed that people use either prescription or non-prescription drugs to self- medicate (Keche *et al.*, 2012). The practice of self-medication is the first choice of self-treatment and is mostly used to treat milder symptoms, the very first signs or symptoms of diseases and ailments when the signs and symptoms are not that severe enough to evoke the need for medical supervisions.

Self-medication, is an important aspect in health-care delivery system especially in developing country like India (Marak, 2016). The validity of self-medication has been recognised by World Health Organisation (WHO) in various settings (Gupta *et al.*, 2011). WHO has defined self medication as the practice whereby individuals treat their ailments and conditions with medicines that are approved and available without prescriptions, and which are safe and effective when used as directed (Marak *et al.*, 2016, WHO, 1998). In 1995, the WHO Expert Committee on National Drug Policy stated: "Self-medication is widely practiced in both developed and developing countries. Medications may be approved as being safe for self-medications by the national drug regulatory authority. Such medicines are normally used for the prevention or treatment of minor ailments or symptoms, which do not justify medical consultation. In some chronic or recurring illnesses, after initial diagnosis and prescription, self-medication is possible with the doctor retaining an advisory role" (Basu, 2018, Gupta *et al.*, 2011, Jain *et al.*, 2015, WHO, 1995). The WHO promotes the practice of responsible self-medication so that patients can get desired benefits without overburdening the health-care delivery system especially in rural and remote areas (Marak *et al.*, 2016; WHO, 2000). According to the guidelines of National Health Policy, WHO promotes the practice of self-medication for effective and quick relief for symptoms without medical consultation and reduce burden on health care services, which are often understaffed and inaccessible in rural and remote areas (Albany, 1988; Kulkarni *et al.*, 2018)

The use of self medication is highly prevalent in India (Marak *et al.*, 2016). Various community based studies from India has founded the prevalence of self-medication in India from 12% to as high as 73% (Kaushal *et al.*, 2012; Selveraj *et al.*, 2014). In India, pharmacists and pharmacy attendants play an active role in fostering self-medication among the local public (Kamat and Nichter, 1998; Shankar *et al.*, 2002; Yadav and Rawal, 2015) Studies from several less developed countries have documented that pharmacies (chemists shops and drug stores) are not only sites where medicines are bought and sold, they are also places where information and advice on health problem and treatment is sought (Fabricant and Hirshhorn, 1987; Ferguson, 1981; Goel *et al.*, 1996; Greenhalgh, 1987; Kamat and Nichter, 1998; Krishnaswamy *et al.*, 1983; Logon, 1983; Ross-Degnan *et al.*, 1996, Shiva, 1985; Van der Geest, 1988; Van der Geest, 1996). Most of these studies were rural or town based and identified pharmacies as a site of primary health care (Kamat and Nichter, 1998). Availability of large number of over-the-counter (OTC) drugs with proven efficiency and safety serves to be one prime cause behind increasing trend of self-medication (Patel *et al.*, 2013). The Indian pharmaceutical industry stands fourth in terms of volume and thirteenth in terms of value globally; exports ceiling to approximately 2.6 billion USD, and the domestic sales reaching the heights of about 4 million USD (Sharma *et al.*, 2012; Yavad and Rawal, 2015). It has been

reported that there are 200 different brands for every drug molecule in India (Clark, 2004; Yadav and Rawal, 2015). This abundance of drugs has led to fierce competition among drug companies and this has ultimately led to the controlled price of medicines, thereby resulting in extremely cheap and affordable drugs as compared to rest of the world (Sharma *et al.*, 2012; Yadav and Rawal, 2015) Subsequently, this results in marked increase in unethical marketing practices, leading to unethical availability (Sharma *et al.*, 2012; Yadav and Rawal, 2015) which together with weak regulatory laws increases the chances of self medication and drug abuse (Buchanan, 1979; Sharma *et al.*, 2012; Yadav and Rawal, 2015). Thus enlarging the list of OTC drugs and increasing availability of controlled drugs provides the people freedom of choosing the type of treatment they want to undergo (Kulkarni *et al.*, 2018). However, it is to be remembered that even though self-medication can be useful in treating common ailments, surplus use of OTC drug can lead to undesired effects and reactions (Kulkarni *et al.*, 2018). Self-medication, thus can be described as a double-edged sword for its users, because it has both beneficial and harmful effects (Marak *et al.*, 2016). Even though, self-medication provides a cheaper substitute for those who cannot afford the cost of clinical service (Abay, 2010, Yadav and Rawal, 2015), or it facilitates better use of clinical skills (Marak *et al.*, 2016), and also enable better utilization of funding in public health program (Hughes *et al.*, 2001; Marak *et al.*, 2016), several studies has reported the potential risks associated with self medication. Self-medication comes with many risks such as misdiagnose/misguidance, inappropriate use of drug for self-medication can also have many other ill-effects like excessive use of drug dosage, prolonged usage, interaction of medicines and poly-pharmacy (Kulkarni *et al.*, 2018, Osama *et al.*, 2017;). Self-medication even leads to increased resistance to pathogens and serious health hazards such as adverse reactions and prolonged suffering (Marak *et al.*, 2016). "Irrational" use of pharmaceuticals, in particular self-medication with antibiotics, has been widely reported leading to the WHO to call attention to the dangers of self-medication as a cause of antibiotic resistance (Etkin, 1992; Kamat and Nichter, 1998; Kunin, 1983; Kunin *et al.*, 1987). In India, self-medication is one of the important factors attributed to development of anti-microbial resistance (Kumar *et al.*, 2013; Marak *et al.*, 2016). In addition to the problems of resistant microbial strains resulting from the appropriate use of antibiotics, drug side-effects, allergic reactions and toxic poisoning have also become a cause of alarm (Kamat and Nichter, 1988).

Self-medication, as a phenomenon, is unique and can be studied as health behaviour in individuals. To understand this phenomenon, one has to understand its many manifestations and the context in which it is experienced. Like most health seeking behaviour, it can be region and culture specific (Parulekar and Mekoth, 2017). The decision for self-medication is found to have been influenced by different factors (cultural, economic, psychological and others) that culminate in the utilization of various therapeutic approaches in searching for a relief (Patel, 2013). As explained in various previous works, self-medication is found to have been related to lifestyle, socioeconomic factors, easy access to drugs , the increased potential to treat or manage certain illnesses through self-care and greater availability of medicinal products (Yadav and Rawal, 2015). It has been further reported that drug use is influenced by the socio-demographic characteristics of drug consumers such as gender, morbidity, age, attitudes about life and health, stress, and social roles (Award, 2005; Lois, 1989; Osemene and Lamikanra, 2012; WHO, 1998). Despite of the fact that, self-medication is practiced by both people from both developed and developing countries, but there is substantial variation in the prevalence rates due to inherent differences in cultural and socio economic factors, disparities in health care systems such as reimbursement policies, access to health care, and drug dispensing policies (Braithwaite and Pechere, 1996; Osemene and Lamikanra,

2012). Keeping all factors into consideration, the present study too will shed light on understanding how different socio-demographic and cultural variables guide a person decision to self-medicate. Even though, there have been several studies from different parts of India which focuses attention on aspects of self-medication, academic literatures still remain sparse from the context of West Bengal. The current study is, therefore, an outcome of an empirical study from North 24 Parganas of West Bengal to understand the prevalence and practice of self medication from the studied area. The study will sought to explore the influence of different socio-demographic variables (age, sex, levels of education and monthly income status), if any, on the practice of self-medication for the studied locales. It will further unveil the pattern of self-medication by including the various dimensions pertaining to same. This includes, reasons for self-medication, ways of procuring medicines to self-medicate, source of information and symptoms warranting the need for self-medication.

METHODOLOGY

For the purpose of present study, North 24 Parganas district of West Bengal was selected as the site of study. North 24 parganas is the district lying in the Southern flank of West Bengal in the Eastern part of India. It is bordered by Nadia to Bangladesh in North and East while in the South lies South 24 parganas and Kolkata and to Kolkata, Howrah, Hooghly in West. Two distinct areas of this very district were selected in order to fulfil the objectives of the current study. One of these areas, administratively falls under Bidhannagar Municipal Corporation of Barasat subdivision of district North 24 Parganas of West Bengal. The study has been undertaken among the selected study participants from a housing estate of Ward number 37 of Bidhanagar Municipal Corporation. The other area selected for the study, however, administratively belongs to Bandipur Gram Panchayat area of Block II Barrackpore subdivision of the same district under study.

Data were collected from altogether 411 study participants from North 24 parganas district of West Bengal. Out of these 411 total participants, 218 study participants belongs to Bidhanagar Municipal Corporation area of Barasat subdivison while 193 belongs to Bandipur Gram Panchayat area of Barrackpur subdivision of the same district. In case of selecting participants from Bidhanagar Municipal Corporation, 311 were approached out of which 218 consented for the study. On the other hand, in case of Bandipur Gram Panchayat area of Barrackpur subdivision, 233 were approached out of which 193 consented for the study. The present study is a cross-sectional study among the adult population of the selected locale where participants from Bengali-speaking Hindu ethnic group was selected. Participants below 18 years if age and those involved in medical profession were, therefore, excluded in the current study.

A structured schedule was prepared by the researchers to collect data on socio-demographic variables which include age, sex, level of education, monthly income status. Socio-demographic information was collected from all those study participants who consented to take part in the study. Selected participants were then asked if they practice self-medication or not and participants practising self-medication were probed further. Data were also collected from those participants who practice self-medication on other dimensions of self-medication which includes: a) reasons for self medication b) sources of information regarding self-medication c) symptoms warranting the need for self-medication d) ways of procuring medicines to self-medicate. Such participants were also asked about the nature of medicines preferred by them for self-medication. All the data were collected by one of the researchers from March 2017 to May 2017.

Prior administering the schedule, the nature of the research was explained to the study

participants and verbal consent was taken from them before filling up the schedule. The participants were assured that their personal information will not be revealed. The data collected were represented in the context of present study using descriptive statistics that includes tabular representation using absolute numbers and percentage. The researchers, moreover, used non-parametric inferential statistical tests (chi-square) to determine the influence of socio-demographic variables on the nature of practice of self-medication and also to determine whether the practice of self-medication is significant for two distinct study locales or not.

RESULTS AND DISCUSSION

Table 1 represents the socio-demographic composition of the study participants from the selected area of study. Out of 218 selected study participants from Bidhannagar Municipal Corporation, 111 (50.91%) are males and 107 (49.08%) are females. Whereas, there are 97 (50.25%) males and 96 (49.74%) females, out of 193 selected study participants from Bandipur Gram Panchayat area. It was seen that almost half of the participants (50.45%) selected from Bidhannagar Municipal Corporation area belong to the age group 56 years and above. Whereas in case of Bandipur Gram Panchayat area, majority of selected participants were from the age group 18 years to 35 years (38.86%) followed by those of the age group 56 years and above (36.78%). A significant difference was found between the levels of education (χ^2= 157.657; p=<0.00001) among the study participants

Table 1 : Socio-demographic distribution of study participants from the areas of study

Characteristics	Bidhannagar Municipal Corporation(%)	Bandipur Gram Panchayat (%)	Total (%)
Age			
18-35 years	73(33.48)	75(38.86)	148(36.00)
36 -55 years	35(16.05)	47(24.35)	82(19.95)
56 years and above	110(50.45)	71(36.78)	181(44.03)
Total (%)	218(100.00)	193(100.00)	411(100.00)
Education Level*			
Non-literates	13(5.96)	98(50.78)	111(27.00)
Primary level of education	20(9.17)	40(20.72)	60(14.59)
Secondary level of education	30(13.76)	22(11.39)	52(12.65)
Higher Secondary level of education	39(17.88)	18(9.32)	57(13.86)
Graduate and above	116(53.21)	15(7.77)	131(31.87)
Total (%)	218(100.00)	193(100.00)	411(100.00)
Income Level*			
Less than 10,000/-	17(7.79)	93(48.18)	110(26.76)
10,000/- to 50,000/-	64(29.35)	83(43.00)	147(35.76)
Above 50,000/-	137(62.84)	17(8.80)	154(37.46)
Total (%)	218(100.00)	193(100.00)	411(100.00)
Sex			
Males	111(50.91)	97(50.25)	208(50.60)
Females	107(49.08)	96(49.74)	203(49.39)
Total (%)	218(100.00)	193(100.00)	411(100.00)

Data is represented both in number and percentages. Figures in parentheses are percentages.
* shows significant chi square tests results between two study locale for the concerned variables. P<0.05 was selected as the significance level for the test when compared between concerned study areas

of both areas of study. While a substantially greater proportion of selected participants from Bidhhangar Municipal Corporation area was graduate or above (53.21%) but on the other hand, nearly half of the selected study participants were non-literates (50.78%). Furthermore, in the context of income status, a significant difference (χ^2=147.496; p=<0.00001) was noted between the selected study participants from two areas of study. 62.84% of selected study participants of Bidhannagar Municipal Corporation area had the monthly income above Rs. 50,000/- and in case of Bandipur Gram Panchayat, majority of selected study participants earned less than Rs 10,000/- in a month (48.18%).

The following tables (Table 2a and 2b) explain the prevalence and practice of self-medication in the studied locale. The influence of socio-demographic variables on the practice of self-medication has been ascertained using non-parametric inferential test. Chi square test revealed that (Table 2a) that the practice of self-medication was significantly associated with age, gender, level of education and income status in case of Bidhanngar Municipal Corporation area. While, on the other hand, chi square tests showed that in case of Bandipir Gram Panchayat area (Table 2b), prevalence of self medication not statistically associated with level of education. Majority of participants of age group 18 years to 35 years were found to practice self-medication in Biddhannagar Municipal Corporation area (47.16%) (Table 2a] and Bandipur Gram Panchayat area (45.45%) (Table 2b] out of 106 and

Table 2a : Distribution of study participants on the basis of practice of self medication in Bidhannagar Municipal Corporation area (N=218)

Characteristics	No practice self-medication (%)	Practice Self Medication (%)	χ^2 value	P value
Age*				
18-35 years	23(20.53)	50(47.16)		
36 -55 years	21(18.75)	14(13.59)	17.379	0.000168
56 years and above	68(60.71)	42(39.63)		
Total (%)	112(100.00)	106(100.00)		
Education Level*				
Non-literate	5(4.46)	8(7.54)		
Primary level of education	8(7.14)	12(11.32)		
Secondary level of education	11(9.82)	19(17.92)		
Higher Secondary level of education	5(4.46)	34(32.07)		
Graduate and above	83(74.10)	33(31.13)	46.612	<0.00001
Total (%)	112(100.00)	106(100.00)		
Income Level*				
Less than 10,000/-	7(6.25)	10(9.43)		
10,000/- to 50,000/-	22(19.64)	42(39.62)	12.762	0.001693
Above 50,000/-	83(74.10)	54(50.94)		
Total (%)	112(100.00)	106(100.00)		
Sex*				
Males	46(41.07)	65(61.32)		
Females	66(58.92)	41(38.67)	8.935	0.002798
Total (%)	112(100.00)	106(100.00)		

Data is represented both in number and percentages. Figures in parentheses are percentages

*represents significant chi square test results when compared between participants practising self medication and not practising for the corresponding socio-demographic variables under study. p value was obtained using Chi-square test. P<0.05 was considered as the significance level for the test.

121 participants found to practice self-medication. Our study further revealed that in case of Bidhannagar Municipal Corporation area, prevalence of self-medication was more among those with relatively higher levels of education (32.07% for secondary level of education; 31.13% for graduates) as seen from Table 2a. On the contrary, non-literates (56.19%) practice more self-medication in case of Bandipur Gram Panchayat. The study too revealed the influence of income status on the practice of self-medication, thereby revealing a considerably higher proportion of study participants of lower income group (less than Rs. 10,000/-) to practice self-medication in case of Bandipur Gram Panchayat area (57.02%) [Table 2b]. But for Bidhannagar Municipal Corporation area, the incidence of practice of self-medication is more for those with income above Rs. 50,000/- (50.94%) as seen from table 02a. For both these two study locales, practice of self-medication was significantly higher among males (61.32%) in Biddhnnagar Municipal Corporation; 59.50% in Bandipur Gram Panchayat area) as seen in Table 2a and 2b out of total participants who practice self-medication for respective locales under study.

Altogether the study found that out of total 218 selected study participants from Bidhannagar Municipal Corporation area, 106 (48.62%) practice self medication. In Bandipur Gram Panchayat area, out of 193 selected participants, 121 (62.69%) practice self-medication (Table 2C). A significant difference was noted between the prevalence of practice of self medication ($\chi^2 = 8.1965$, p=0.004197)

Table 2B : Distribution of study participants on the basis of practice of self medication in Bandipur Gram Panchayat Area (N=193)

Characteristics	No practice self-medication (%)	Practice Self Medication (%)	χ^2 value	P value
Age*				
18-35 years	20(27.78)	55(45.45)		
36 -55 years	19(26.39)	28(23.14)	6.379	0.041179
56 years and above	33(45.83)	38(31.40)		
Total (%)	72(100.00)	121(100.00)		
Education Level				
Non-literate	30(41.66)	68(56.19)		
Primary level of education	17(23.61)	23(19.10)		
Secondary level of education	11(15.27)	11(9.09)	7.856	0.0970
Higher Secondary level of education	5(6.94)	13(10.74)		
Graduate and above	9(12.50)	6(4.95)		
Total (%)	72(100.00)	121(100.00)		
Income Level*				
Less than 10,000/-	24(33.34)	69(57.02)		
10,000/- to 50,000/-	39(54.17)	44(36.36)		
Above 50,000/-	9(1.25)	8(6.06)	10.362	0.005623
Total (%)	72(37.30)	121(62.69)		
Sex*				
Males	25(34.72)	72(59.50)		
Females	47(65.27)	49(40.49)	11.089	0.00868
Total (%)	72(37.30)	121(62.69)		

Data is represented both in number and percentages. Figures in parentheses are percentages

*represents significant chi square test results when compared between participants practising self medication and not practising for the corresponding socio-demographic variables under study. p value was obtained using Chi-square test. P<0.05 was considered as the significance level for the test.

Table 2C: Comparing the prevalence and practice of self-medication for the concerned study locales				
Characteristics	Bidhannagar Municipal Corporatiton	Bandipur Gram Panchayat	χ^2 value	p value
Practice of self –medication (%)	106(48.62)	121(62.69)		
No practice of self-medication (%)	112(52.09)	72(37.30)	8.196	0.04197
Total (%)	218(100.00)	193(100.00)		

Data is represented both in number and percentages. Figures in parentheses are percentages
*represents significant chi square test results when compared between two study locales. p value was obtained using Chi-square test. P<0.05 was considered as the significance level for the test.

between these areas of study as shown by Chi square tests Preference of allopathic medicines for self medication accounts for 52.83% out of 106 participants practicing self-medication in Bidhannagar Municipal Corporation. Use of homeopathic medicines for self medication is higher for Bandipur Gram Panchayat area (57.02%). Herbal medicines are used relatively at lesser proportion for self-medication (Table 3).

Table 3 : Preference of different forms of medicines for self-medication for participants practicing self-medication in the selected locales				
Type of medicines preferred	Bidhannagar Municipal Corporation	Bandipur Gram Panchayat	χ^2 value	p value
Allopathic medicines (%)	56(52.83)	43(35.35)		
Homeopathic medicines (%)	37(34.90)	69(57.02)	11.152	0.003782
Herbal medicines (%)	13(12.26)	9(74.38)		
Total (%)	106(100.00)	121(100.00)		

Data is represented both in number and percentages. Figures in parentheses are percentages
*represents significant chi square test results when compared between two study locales. p value was obtained using Chi-square test. P<0.05 was considered as the significance level for the test.

Our study further tried to find out the various other aspects related to the practice of self-medication (Table 4). Pertaining to different reasons for self-medication, for majority of selected study participants, self-medication is preferred in order to save time (34.90%). While, for Bandipur Gram Panchayat area, saving money (38.84%) remains the most important reason for self-medication followed by not willingness to go to doctor (33.05%). Telling the name of medicines (34.90%) or showing the previous prescription (26.41%) remains the most common way of procuring medicines for people residing in Bidhannagar Municipal Corporation area. But for Bandipur Gram Panchayat area, participants practicing self-medication were mostly found to tell their symptoms of the ailments (30.57%) prior availing medicines. Telling the shape and colour of the medicine (25.69%), too, remains another common way for procuring medicines in case of Bandipur Gram Panchayat area. Our study also showed that pharmacists (42.45% in Bidhannagar Municipal Corporation; 43.80% in Bandipur Gram Panchayat area) remains the most important source of information for participants who practice self medication which was followed by participants' own initiative (30.18%) in case of Bidhannagar Municipal Corporation area. Participants from Bandipur Gram Panchayat were found to rely significantly on family members and relatives (26.44%) in order to get information for self-medication. Fever (23.58%), headache (21.69%), cough and cold (18.56%) and gastrointestinal problems (16.98%) remains the common symptoms to self-medicate in case of Bidhannagar Municipal Corporation area. For Bandipur Gram Panchayat, headache and body pain (22.31%)

followed by fever (19.83%) are the most common symptoms warranting the need for self medication.

Table 4: Pattern of self-medication among participants practising self-medication for the selected locales

Variables	Bidhannagar Municipal Corporation (%) (N=106)	Bandipur Gram Panchayat (%) (N=121)
Reasons for Self Medication		
Saves time	37(34.90)	36(29.75)
Saves money	13(12.26)	47(38.84)
Emergency situation	18(16.98)	11(9.09)
Milder symptoms	33(31.13)	20(16.52)
Previous experiences	5(4.71)	7(5.78)
Not willingness to go to doctor	4(3.77)	40(33.05)
Ways of Procuring Medicines		
Telling symptoms of the ailments	9(8.49)	37(30.57)
Showing previous prescriptions	28(26.41)	19(15.70)
Telling name of medicines	37(34.90)	11(9.09)
Telling shape or colour of medicine	2(1.88)	31(25.69)
Telling composition of medicines	16(15.09)	8(6.61)
Drug stored at home	14(13.20)	15(12.39)
Source of Information		
Pharmacists	45(42.45)	53(43.80)
Own initiative	32(30.18)	19(15.70)
Family members and relatives	13(12.26)	32(26.44)
Neighbours and friends	6(5.67)	14(11.57)
Television and internet	10(9.43)	3(2.47)
Symptoms for Self Medication		
Fever	25(23.58)	24(19.83)
Cough and cold	20(18.56)	20(16.52)
Headache and body pain	23(21.69)	27(22.31)
Gastrointestinal problems	18(16.98)	10(8.26)
Menstrual problems	5(4.71)	10(8.26)
Skin problems	9(8.49)	11(9.09)
Respiratory problems	6(5.66)	11(9.09)

Data is represented both in number and percentages. Figures in parentheses are percentages. The above table is based on multiple responses and so the percentages may not add up to 100% in some cases.

Discussion:

The concept of self-medication has gained universal acceptance as it encourages an individual to treat minor illness with effective and simple remedies (Afolabi, 2008; Aqueel and Shabbir, 2014) as well as to develop self-belief in preventive, curative and rehabilitative care (Abosede, 1984; Aqueel and Shabbir, 2014). According to world self-medication industry, it is one of the most essential tools used by a person suffering from a common illness, which does not necessitate doctor's visit. It is usually considered as first choice remedy for early disease symptoms and is a part of patient's medical behaviour (Aqueel and Shabbir, 2014; Klemenc-Ketis and Hladnik, 2011). The present study was conducted in two distinct areas administratively under North 24 parganas district of West Bengal, India, to understand the prevalence and pattern of self-medication in the concerned area of study. One of the areas belong to Bidhannagar Municipal Corporation while other area falls

under Bandipur Gram Panchayat. The study has shown a significant statistical difference between the levels of education (χ^2= 157.657; p=<0.00001) and monthly income status (χ^2=147.496; p=<0.00001) between these two studied locales, therefore reflecting a difference in socio-demographic composition between the selected study participants. The proportion of participants practicing self-medication in Bidhannagar Municipal Corporation area (48.62%) was found to be comparable to previous studies from town Sahaswan in Northern India (50.00%) (Ahmed *et al.*, 2014); urban slum area of Udupi Taluk, Karnataka (48%) (Pranav *et al.*, 2017); and urban non slum area of Udupi Taluk (50%) (Mishra *et al.*, 2016). Prevalence of self-medication from Bandipur Gram Panchayat area (62.69%) was seen to be comparable with results from earlier studies in Ismalabaad, Pakistan (61.20%) (Aqueel and Shabbir, 2014); rural areas of Barabanki (69.60%) (Keshari *et al.*, 2014); Erode, South India (62.00%) (Samuel *et al.*, 2011). Out of total 411 participants selected for study, the current study found 55.23% to practice self medication consistent with studies from rural Meghalaya (55.00%) (Marak *et al.*, 2016); urban slum community of Mumbai (55.92%) (Gupta *et al.*, 2011). Some other studies from Indian perspectives showed a very high prevalence of self-medication compared to present findings. These includes studies by Phalke *et al.* (2006) (81.50%); Banjara and Bhukya (2014) (80.00%); Jain *et al.* (2015) (73.60%); Kumar *et al.* (2015) (92.80%). However, studies by Durgawale (1998) (34.55%) and Selveraj *et al.* (2014) (11.90%) showed considerably lesser percentage of self-medication compared to our present results. In worldwide scenario, the overall prevalence of self-medication in present study is higher than studies from Hong Kong, China (32.50%) (Lam *et al.*, 1994); Brazil (Domingues *et al.*, 2015) (35.00%), Federal district, Brazil (Domingues *et al.*, 2017) (14.90%); Slovenia (Smogavec *et al.*, 2010) (51.00%), Ethiopia (Suleman *et al.*, 2009) (39.20%); Sudan (Award *et al.*, 2006) (28.30%). The present findings were, however, substantially lesser than that of studies from Kismu community, Kenya (Owour *et al.*, 2015) (76.90%); Slovenia (Klemenc-Ketis *et al.*, 2011) (92.30%) and Nigeria (Osemene and Lamikanra, 2011) (91.40%).

A review of literature on several studies done in the past well explained the fact that such variation in the prevalence rate of practice of self medication can be due to several factors. Regional, educational, socio-cultural conditions and different methodologies used for determining self-medication may be among the reasons for the wide variations among these studies (Aqueel and Shabbir, 2014). The present study strived to unravel the influence of different socio-demographic variables on the practice of self-medication in the concerned areas of study. A significant statistical difference (χ^2=17.399, p=0.000168 in Bidhannagar Municipal area; χ^2= 6.379, p=0.041179 in Bandipur Gram Panchayat area) was noted between the participants of different age groups pertaining to practice of self medication for both the areas of study. A substantially high proportion of selected participants practising self medication were seen to belong to relatively lesser age groups (age group 18 years to 35 years). Similar trend being reported from several other community based studies from Indian perspectives (Chari *et al.*, 2015; Jain *et al.*, 2015; Gupta *et al.*, 2011; Kandavalli *et al.*, 2017; Kulkarni *et al.*, 2012; Marak *et al.*, 2016; Shankar *et al.*, 2002) where younger participants were found to indulge more towards the practice of self-medication. Studies from Ismalabaad, Pakistan (Aqueel and Shabbir, 2014) and Shahbaz Bag, Faisalabad (Ruiz, 2010) showed similar results. The likelihood of prevalence of self-medication found to be more among the younger participants might be because of the fact that there were more working people at this age group and owing to extreme work load and less number of vacations they often do not get time to consult doctors and therefore prefers to self-medicate.

Levels of education, remains another important factor behind the influence of self-medication.

Our study showed that proportion of more educated participants (that is, participants with higher secondary level of education or at least, graduates or above) from Bidhannagar Municipal Corporation practising self-medication is significantly higher (χ^2=46.612, p=<0.00001) compared to participants who are non-literates or with primary level of education. Similar results have been reported from different studies from parts of India (Ahmed *et al.*, 2014; Jain *et al.*, 2015; Kandavalli *et al.*, 2017; Kaushal *et al.*, 2012; Marak *et al.*, 2016;) and globally (Afolabi, 2008; Aqueel and Shabbir, 2014; El-Nimr *et al.*, 2015; Osemene and Lamikarna, 2012) where proportion of self-medication is found to be more among educated participants. However, the frequency of prevalence of self-medication for participants with higher secondary level of education is considerably lower than studies from Sahaswan town of Northern India (50.00%) (Ahmed *et al.*, 2014); urban area of Southern Rajasthan (83.2%) (Jain *et al.*, 2015); rural areas of Meghalaya (63.60%) (Marak *et al.*, 2016); Kadapa, Andhra Pradesh (89.03%) (Kandavalli *et al.*, 2017). Education therefore plays a pivotal role in guiding the practice for self-medication. A survey of previous academic literatures well stated the fact that educated people can clearly read and understand the labels of consumed medicines, while illiterate people find it almost impossible to read and understand labels. Illiterate people usually opt for easier to remember ways of recognizing medicines e.g. common usage names and costs of medicines. (Afolabi, 2008, Aqueel and Shabbir, 2014, Basu, 2018). The ability of educated people to read and understand labels of the consumed medicines makes them more prone to self-medication as compared to illiterate people (Aqueel and Shabbir, 2014, Basu, 2018). The fact that incidence of occurrence of self-medication was found to be more for those with higher level of education thereby reflects the fact that educated participants are more confident about self-administration of medicines. A contrary view was, however, noted in case of participants from Bandipur Gram Panchayat. Even though, the difference between participants regarding practice of self-medication between different levels of education was found to be statistically non-significant, but non-literates were found to practice more self-medication (56.19%). Similar views has been placed by other previous studies which includes studies from rural areas of Barabanki, Uttar Pradesh (38.70%) (Keshari *et al.*, 2014) and Federal district, Brazil (33.00%) (Dommingues *et al.*, 2017) where the percentages are considerably lower than the present finding. Studies from Nigeria (Afolabi, 2008; Osemene and Lamikarna, 2011) also shown that there is increase inclination towards self-medication with increasing levels of education, thereby reinforcing the fact that educated participants were found to use more rational use of drug (Osemene and Lamikarna, 2011). Educated people might be more cautious about judicious use of medicines and thereby less likely to self-medicate.

Our study, further, revealed the influential role of income status on the practice of self-medication. A significant statistical difference (χ^2=12.762, p=0.001693 in Bidhannagar Municipal Corporation; χ^2= 10.662, p=0.005623 in Bandipur Gram Panchayat) was seen between the participants of different monthly income status for the study locales. Though practice of self-medication was found to be higher among low income group participants whose monthly income is less than Rs. 10,000/- in case of Bandipur Gram Panchayat area, a contrary view is, however, noted in case of Bidhanngar Municipal Corporation area. It was reported in the study that out of total selected participants who self-medication in studied Municipal Corporation area, majority of them belongs to monthly income group above Rs. 50,000/-. Studies conducted in urban Puducherry (Selveraj et.al, 2014), shows that self-medication is more among the socio-economically better off participants compared to respondents belonging to lower socio-economic status. This is contradictory to previous studies reported from Sri Lanka (Wijesinghea *et al.*, 2012) and China (Yuefeng *et al.*, 2012). According to Marak *et al.* (2016), socio-economically better off respondents have more

access to resources that might be a contributing factor in their practice of self-medication. Studies by Keche *et al.* (2012) in rural parts of Pune, Maharashtra found that about 50% of self-medication was observed in lower socio-economic status (monthly income less than Rs. 10,000/-). Various other studies which includes studies by Durgawale *et al.* (1998), Worku *et al.* (2003); Phalke *et al.* (2006); Gupta *et al.* (2011), too cited monetary constraints are the prime factor guiding the decision to self medicate. In developing countries like India, the poor socio-economic status, high cost of modern medicines, and non-availability of doctors in rural areas create problem for access for the health care services and may led to increased self-medication use (Keche *et al.*, 2012; Shankar *et al.*, 2002). Therefore self-medication remains an alternative health seeking behaviour for participants with low income status to avoid expenditure on health issues and to avoid visiting medical practitioners.

Our study showed that practice of self medication is statistically higher (χ^2= 8.935; p=0.002798 for Bidhannagar Municipal Corporation; χ^2=11.089; p=0.00868 for Bandipur Gram Panchayat) among males compared to females. A review of literature on previous works from Indian perspectives (Ahmed *et al.*, 2014; Jain *et al.*, 2015; Keche *et al.*, 2012; Keshari *et al.*, 2014; Kandavalli *et al.*, 2017; Marak *et al.*, 2016; Pranav *et al.*, 2017; Selveraj *et al.*, 2014) substantiated the present results where males are found to practice more self-medication than females. The proportion of male participants practicing self medication in Bidhnnagar Municipal Corporation area (61.32%) is quite close to earlier studies from town Sahaswan of Northern India (66.00%) (Ahmed *et al.*, 2014). Prevalence of self-medication among males (59.50%) in Bandipur Gram Panchayat is closer to studies from rural areas in Pune, Maharashtra (53.05%) (Keche *et al.*, 2012) and studies from rural areas of Meghalaya (54.07%) (Marak *et al.*, 2016). Studies by Aqueel and Shabbir (2014), Baig (2012), Martins *et al.*, (2002), Shankar *et al.* (2002), Wijesinghea *et al.* (2012), from global perspectives too supported the results from present study. The probable reasons behind increased incidences of self-medication among males can be because of the fact males are more involved in employment. Owing to increased work pressure, males prefer to self-medicate in order to save time. Similar viewpoint was put forward by earlier studies from rural Meghalaya (Marak *et al.*, 2016). Neglecting attitude of males towards mild illness and to avoid loss of wages by spending in medical treatment can be cited as other reasons associated with such trend (Selveraj *et al.*, 2014).

In the context of preference of type of medicines for self-medication, allopathic medicines (52.83%) are used mostly by participants practicing self-medication in concerned Municipal Corporation area which is much in concordance to results reported from previous studies by Kulkarni *et al.* (2012), Wijesinghea *et al.* (2012), Keshari *et al.* (2014), Aqueel and Shabbir (2014). The increased proportion of participants from the concerned Gram Panchayat area, on the other hand, was found to use homeopathic medicines (57.02%) as the most trusted source for self medication. Such substantial inclination towards homeopathy can be due to cheaper price of such medicines coupled with lesser side effects, thereby making it more acceptable for self-medication. While illustrating the various reasons for self-medication, in case of Municipal Corporation the most common reason cited was time saving (34.90%) which is consistent to previous studies by Pandya *et al.* (2013)(41.20%) and Keshari *et al.* (2014)(45.20%), Self medication was beneficial for milder symptoms (31.13%) too remains another important reason to self medicate. Similar views have been reported from previous studies by Sawaldha (2007) (58.00%), Gutema *et al.* (2011) (37.50%), Aqueel and Shabbir (2014) (41.80%) Jain *et al.* (2015)(39.51%), Owour *et al.* (2015) (82.40%), Marak *et al.* (2016)(30.00%), where a considerable proportion of study participants consider mildness of illness as the major cause. Economic constraints has been noted in several studies from past (Ahmed *et al.*, 2012; Ahmed *et al.*, 2014; Garud *et al.*, 2014; Gupta *et al.*, 2011; Samuel *et al.*,

2011; Zafar *et al.*, 2008) which goes in accordance to findings from Bandipur Gram Panchayat where participants mostly practice self-medication to save money (38.84%).

Our study showed that in the context of source of information regarding self-medication, majority of participants are found to rely on pharmacist. This is much in line with previous studies from urban resettlement colony of New Delhi (Lal *et al.*, 2007); urban slum of Maharashtra (Gupta, 2011); urban areas of Southern Rajasthan (Jain *et al.*, 2015), Kasabe *et al.* (2015); urban slum dwellers of Udupi Taluk, Karnataka (Pranav *et al.*, 2017), where pharmacist has been reported to play the pivotal role in providing information regarding self-medication. Owing to considerable difference in level of education, participants from Bidhannagar Municipal Corporation area was also found to self-medicate from their own initiate (30.18%) while in Gram Panchayat area, family members and relatives (26.44%) played a more vital role. Earlier studies from Pokhara valley, Western Nepal (Shankar *et al.*, 2002); Erode, South India (Samuel *et al.,* 2011), Hong Kong (You *et al.*, 2011); town Sahaswan, Northern India (Ahmed *et al.*, 2014); rural Meghalaya (Marak *et al.*, 2016), too reported family members, relatives and neighbours to be an important source of information for participants practicing self-medication. Difference in levels of education was too reflected in the way of procuring of medicines for self medication. It was reported that people from concerned Gram Panchayat area mostly buy medicines by either telling the name of symptoms of the illness (30.57%) or by telling the colour or shape of the medicines (25.69%). On the other hand, participants from Municipal Corporation under study were found to tell the name of the medicines (34.90%) or to show previous prescriptions (26.41%) for availing medicines. Previous studies conducted in an urban slum of Maharashtra by Gupta *et al.* (2011) showed in their study that those who practice self-medication request for drug simply by telling the symptoms while Afolabi (2007) in a study among Nigerian adult population showed that participants mostly request for drug by telling their trade names. Earlier study from Kismu County, Kenya (Owour *et al.*, 2015) showed that majority of participants avail medicines for self-medication by telling the shape or colour of the medicines. Moreover, our study also found that much in concordance to earlier studies by Gupta *et al.* (2011), Gutema *et al.* (2011), Keche *et al.* (2012), Ahmed *et al.* (2014), where headache and body pain (22.31%) has been cited as the major symptoms warranting the need for self-medication for participants from Gram Panchayat area. Fever (23.58%), on the other hand, was seen as the major symptoms to self-medicate for participants coming from Bidhannagar Municipal Corporation which further reinforces studies by Puwar *et al.* (2012), Jain *et al.* (2015), Kumar *et al.* (2015) and Seam *et al.* (2018) in the past.

Conclusion:

The present study is an endeavour to understand the pattern and practice of self medication in the selected district of North 24 Parganas of West Bengal, India. The study was undertaken in two distinct administrative locales of this district so as to unravel separately the scenario pertaining to self-medication in these locales. The practice of self-medication was found to be significantly (χ^2 = 8.1965, p=0.004197) higher among the selected participants from Bandipur Gram Panchyat (62.69%) than Bidhannagar Municipal Corporation area (48.62%) under study. This may be attributed to the fact that there lies a significant statistical difference between the education levels (χ^2= 157.657; p=<0.00001) of the participants from both these areas as well as in the context of income status (χ^2=147.496; p=<0.00001) among the study participants. Apart from the level of education and income status, age and gender, too, was found to have an influence on the practice of self-medication as ascertained through bi-variate non-parametric inferential tests in the current study.

Level of education and income status further showed caused a variation in choice of medicine to self medicate such that there remains statistical difference between the two study area pertaining to same. This is reflected by the increased preference for allopathic medicines (52.83%) in case of Bidhannagar Municipal Corporation area compared to homeopathic medicines (57.02%) in concerned Gram Panchayat area. Therefore, the study well substantiated the fact that the decision to self-medicate is the outcome of multiple socio-demographic factors acting in concert. Finally the study also tried to bring to fore the various aspects (that includes, reasons for self medication; ways of procuring medicines to self-medicate; source of information for self-medication; symptoms warranting the need for self-medication) associated with the practice of self- medication and to illustrate an overall pattern of self-medication for the concerned study locale. The given study, though limited by small sample size under consideration, undoubtedly provides a podium for shedding light on the scenario on self-medication from the context of West Bengal and showed self-medication, a form of health seeking behaviour, as an alternative to form of institutionalised form of medical treatment.

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