

**ORIGINAL RESEARCH**

# Roadblocks to medication adherence in population of Northern India: A cross-sectional observational study

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**ABSTRACT**

**Background:** Non adherence to medications is one of the biggest challenges for health care system nowadays. Medication non adherence is especially an issue for non-communicable (chronic) diseases where it accounts for nearly 74% of all deaths globally. Reasons for medication non-adherence vary from person to person. The current study was designed to explore the possible hurdles in the path of medication adherence so that appropriate measures can be taken to rectify them. **Methods:** It was a questionnaire-based study where questionnaire was circulated through social media platform WhatsApp and responses thus obtained were analyzed using Microsoft Excel Sheet and results were expressed as percentages. **Results:** In our study, forgetfulness 78% was identified as the major hurdle to medication adherence. Other important barriers were doubt regarding the healing power of the medicine 61%, apprehension about adverse effects of drugs 61%, belief that natural remedies are better 60%, participants discontinuing their medications once they felt symptomatically better 57%, participants considering frequency of drug intake troublesome 51%. Participants complaining that they had inadequate knowledge about their disease and drug prescribed 41%. Subjects finding their medications costly 40%, subjects believing that by consuming drugs on daily basis, their life may become dependent on medications 40%. **Conclusion:** A number of impediments to medication adherence were found in our study sample. Attempts to address these hurdles on individual basis can go a long way in reducing the unnecessary burden on the health care system and by and large overall well-being of the community will definitely improve.

**Keywords:** Barrier, Non-adherence, non-communicable disease, Adverse effects, Polypharmacy.

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**INTRODUCTION**

Drugs constitute a major part of the therapeutic modality for most of the patients. For achieving optimal therapeutic outcome, the health care professionals should ensure strict medication adherence. Even World Health Organization considers adherence as an important contributor to treatment success<sup>1</sup>. Adherence is the process by which patients take their medications as prescribed<sup>2</sup>. Non-adherence is one of the biggest challenges for health care system today<sup>3</sup>. Medication non adherence is especially an issue for non-communicable (chronic) diseases like cardiovascular diseases, hypertension, diabetes etc. which account for nearly 74% of all deaths globally<sup>4</sup>. Majority of medication related hospital admissions are due to non adherence<sup>5</sup>. Even in case of secondary prevention treatment, non-adherence further aggravates the risk of recurrence and mortality<sup>6</sup>. Poor medication adherence is not only

dangerous but also increases financial burden for the patient<sup>7</sup>. The current UK National Institute for Health and Care Excellence (NICE) guidelines highlights the importance of identifying the specific factors responsible for medication non adherence for an individual so that appropriate measures can be used to combat it<sup>8</sup>. Studies have shown that 50% of patients fail to adhere to the treatment due to polypharmacy and co-morbidities<sup>9,10</sup>. Medication non adherence varies as per the gender, age, economic status, educational qualification, etc. Elderly population especially experience negative effects of poor adherence<sup>11</sup>. Knowledge about medications prescribed is an important factor contributing to medication adherence<sup>12</sup>. In addition, other possible barriers include difficulty in taking medications, forgetfulness, side effect profile, drug interactions, cost of the medicine, neglect on part of caregivers, etc<sup>13,14</sup>.

Non adherence can be intentional or unintentional. Unintentional non adherence occurs due to forgetfulness and limitation of resources while intentional non adherence is influenced by perceptual beliefs like when the patients deliberately does not take the prescribed medications<sup>15</sup>. For achieving good medication adherence, it is important to identify and address the possible barriers on individual basis. By investigating the barriers to medication adherence, appropriate measures can be taken to reduce them. This will in turn improve the patient compliance and desired therapeutic effect will be achieved. A multidimensional approach should be framed to overcome these hurdles and should include the patient, physician and the health care system<sup>16,17</sup>. Hence the current study was designed to explore the possible hurdles in the path of medication adherence so that appropriate measures can be taken to combat them.

## METHODS

Our study was conducted in the department of pharmacology, GMC Srinagar for a period of one

month (may 2023) after getting approval from Institutional Ethical Committee. An electronic questionnaire to figure out the possible barriers to medication adherence was prepared using Google forms and circulated through social media platform WhatsApp.

The questionnaire was prepared based on previous studies. The questionnaire consisted of three sections. The first section was regarding the demographic characteristics of the participants. The second section gathered information about the various conditions for which the participants used medicines, number of medicines consumed per day and the different types of drugs consumed by the study respondents. The third section consisted of various questions to identify all the possible barriers to medication adherence. Options for the responses were framed on three-point Likert scale.

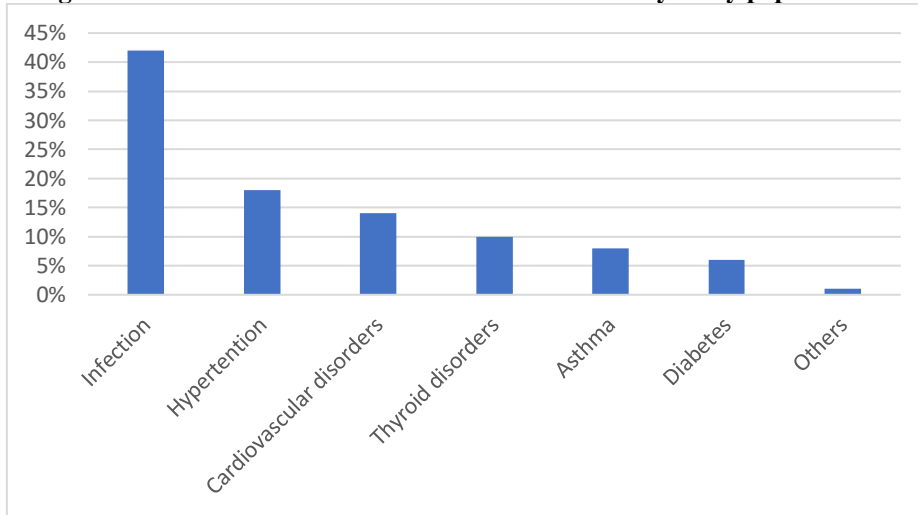
We received responses from 78 participants which were then included in the study. Responses were compiled using Microsoft Excel Sheet and then analyzed. Percentage analysis of the data was done.

## RESULTS

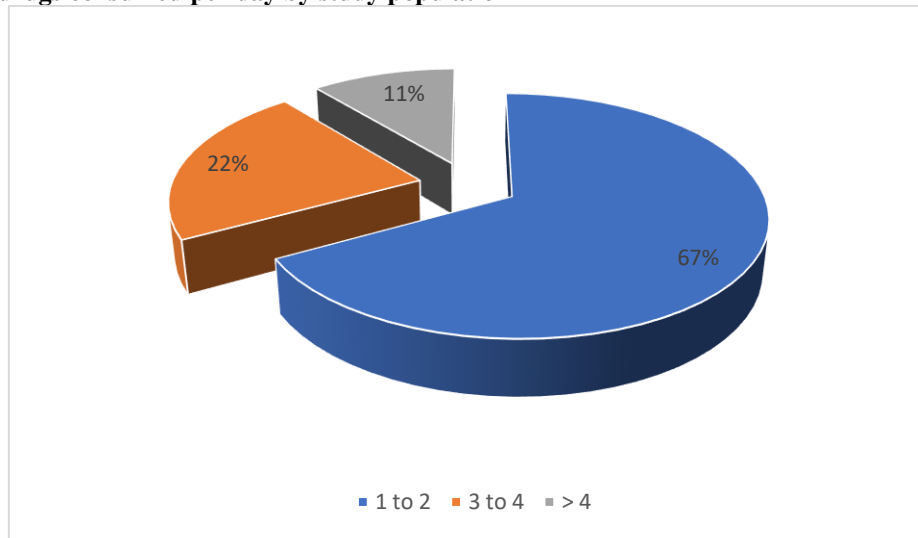
**Table 1: Demographic profile of study population**

Parameter	Number	Percentage
<b>AGE</b>		
18-28	125	32
29-38	185	47
39-48	45	12
49-58	15	4
59- above	20	5
<b>GENDER</b>		
Male	46	59
Female	32	41
<b>EDUCATIONAL QUALIFICATION</b>		
High school	8	10
Graduate	23	29
Post graduate	47	61
<b>RESIDENCE</b>		
Urban	61	78
Rural	17	22
<b>WORK PROFILE</b>		
Working	53	68
Non working	25	32
<b>INCOME</b>		
<20,000	12	16
20,000 – 50,000	20	26
50,000 -1 lakh	30	38
>1 lakh	16	20

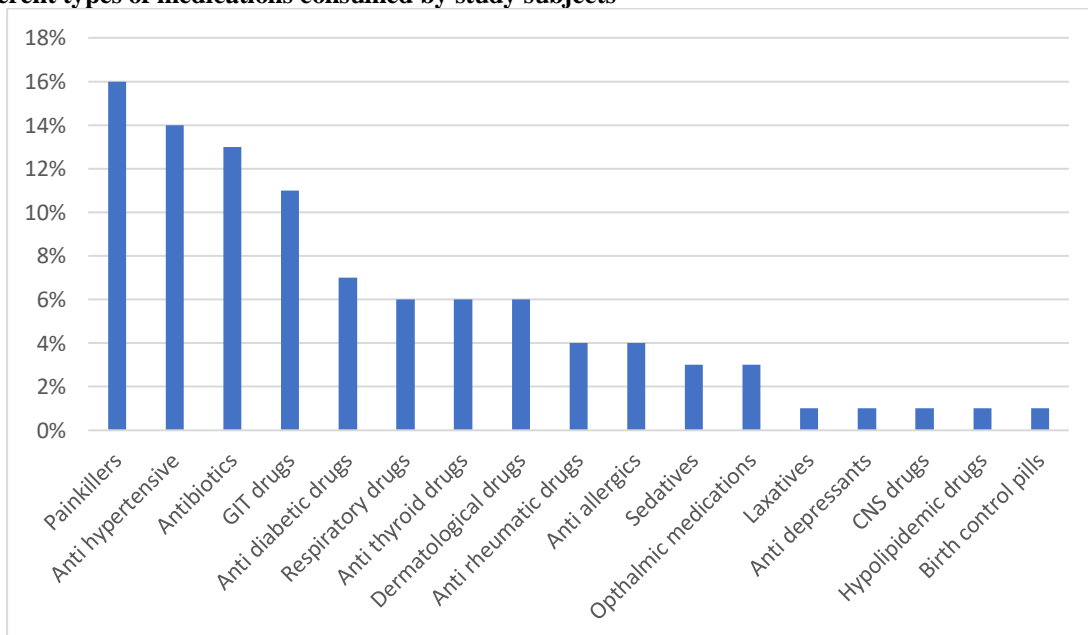
**Figure 1: Leading conditions for which medications were consumed by study population**



**Number of drugs consumed per day by study population**



**Different types of medications consumed by study subjects**



**Barriers to medication adherence**

	<b>Barrier</b>	<b>Yes</b>	<b>No</b>
1.	Incomplete information about the drugs and disease	34 (44%)	44 (56%)
2.	Dubious faith in the integrity and healing power of medicine	48 (62%)	30 (38%)
3.	Discontinuation of drugs on symptomatic improvement	45 (58%)	33 (42%)
4.	Difficulty while administering medications through i.v, i.m route.	54 (69%)	24 (31%)
5.	Difficulty in consuming medications as per doctor's instructions	16 (21%)	62 (79%)
6.	Extra investigations and continuous monitoring	30 (38%)	48 (62%)
7.	Difficulty in procuring medicines when you run out of stock	31 (40%)	47 (60%)
8.	Trouble opening medication packages	7 (9%)	71 (91%)
9.	Unpalatable taste	22 (28%)	56 (72%)
10.	Big size of medication which cannot be swallowed easily	24 (31%)	54 (69%)
11.	Apprehension that drugs may be needed for entire life	37 (47%)	41 (53%)
12.	Worry that life may become dependent on medicines	32 (41%)	46 (59%)
13.	Dependency on family members for drug intake	13 (17%)	65 (83%)
15.	Apprehension about adverse effects of drugs	49 (63%)	29 (37%)
16.	Belief that natural remedies are better	51 (65%)	27 (35%)
17.	Forgetfulness	60 (77%)	18 (23%)
18.	Deliberately stopping the intake of drugs without satisfactory reason	43 (55%)	35 (45%)
19.	Cost of the drugs	32 (41%)	46 (59%)
20.	Increased frequency of drug intake	42 (54%)	36 (46%)
21.	Too busy to take drugs	27 (35%)	51 (65%)
22.	Too many drugs to be taken in a day	19 (24%)	59 (76%)
23.	Anxiety and stress about drugs	24 (31%)	54 (69%)
24.	Difficulty in understanding doctor's instructions	21 (27%)	57 (73%)
25.	Less time given during consultation	38 (49%)	40 (51%)

**DISCUSSION**

The biggest challenge for health care system today is medication non adherence. It is mainly an issue for non-communicable diseases where it is responsible for majority of deaths. There are various hurdles in the path of medication adherence. Since these hurdles vary from person to person, it is important to identify and address these barriers on individual basis. This prompted us to frame the current study to identify such barriers so that appropriate measures can be taken to overcome them. The study was conducted in the department of pharmacology, GMC Srinagar for a period of 1 month (May 2023). Majority of participants were in the age group of 29-38 years (47%) with male predominance (59%), most of them post graduates (61%) living in urban areas (78%). Majority of study participants were mainly from working class (68%), financially stable and earning around 50,000- 1 lakh monthly (38%).

Majority of the participants (88%) consumed less than 3 medications per day. Similar results were reported from an earlier study conducted by Odegard PS et al<sup>18</sup> where 50% participants were using 2 medications per day while 16% were using 3 medications per day. On the other hand, in the study conducted by Velusamy S et al<sup>19</sup> subjects mainly consumed 5-8 drugs per day (70%).

Among chronically used drugs anti-hypertensives were the most commonly used drugs by our study participants (14%), followed by drugs for gastrointestinal ailments (11%) and antidiabetic drugs (7%). Similar results were reported by Chan AHY et

al<sup>20</sup> where participants mainly used antihypertensives (39%) followed by hypolipidemic drugs (31%).

People many times forget to take their medicines and hence forgetfulness constitutes a major non-intentional hurdle for medication adherence. In our study population, forgetfulness (77%) and doubt regarding the efficacy of the medicine (62%) were identified as the major hurdle to medication adherence. Similarly in the research conducted by Beena Jimmy et al<sup>21</sup> 49% subjects regarded forgetfulness as a reason for their medication non adherence. Again forgetfulness (43%) and busy schedule (45%) were reported as major barriers to adherence by Chan AHY et al<sup>20</sup>. There are several ways to tackle this hurdle like keeping reminders (alarms), linking the daily dose to an everyday activity, keeping the medicines in such a place which a person is likely to visit every day or assigning family members to check whether the patient is taking medicines regularly or not.

Another stumbling block to medication adherence in our study population (41%) was the cost of medication. Similarly in the research conducted by Xu J et al<sup>22</sup> (81%) subjects experienced cost related non adherence. Khera R et al<sup>23</sup> also reported from his research work that 12.6% subjects considered cost of the drugs as significant barrier to medication adherence.

In our research 41% subjects were worried that their life might become dependent on medicines while (58%) discontinued the drugs on symptomatic improvement. Likewise in the study conducted by

Velusamy et al<sup>19</sup>(52%) participants were apprehensive about taking the drugs for a long time and (39%) stopped the drugs once they felt better. These issues can be resolved if proper communication between the treating physician and patient is ensured.

Polypharmacy is also one of the important reasons due to which patients become non adherent to the treatment. It is mainly seen in elderly population. According to Bhagavathula AS et al<sup>24</sup>prevalence of polypharmacy is 49 % among older people in India. In our research work only 24% subjects considered polypharmacy as a barrier to medication adherence. This can be because, majority of the participants in our study were in the age group of 29-38 years (47%). Velusamy et al<sup>19</sup> also reported that 32% participants in his study considered taking multiple pills as a burden. The mean age of their study participants was 55 years. This problem can be solved by using fixed dose combinations wherever possible.

In our study, 65% participants believed that natural remedies were better and this was considered as an important factor in medication non-adherence. This may be possibly due to apprehension about adverse effects of drugs, which were documented in 61% of our study population. In a study conducted by Atinga RA et al<sup>25</sup>, non-adherence was due to participants resorting to traditional or herbal medicines as they found it safer and more effective. The same was considered as a significant barrier to medication adherence in another study conducted by Kvarnstrom K et al<sup>26</sup> where participants also preferred homeopathic remedies to conventional drugs.

44% subjects in our study complained that they had incomplete information about the disease and the drug they consumed. This was also among the leading causes of medication non adherence. Similarly in the study conducted by Velusamy et al<sup>19</sup> 91% subjects considered lack of information about the drug and disease as an important roadblock to medication adherence. Treating physicians can help their patients to overcome this hurdle by involving them while deciding the treatment plan. Physicians should brief their patients about their health conditions and advise them to take their medications as prescribed and give them ideas to improve their compliance.

## CONCLUSION

Medication non-adherence is an important issue in healthcare system today. It may be responsible for increased burden of disease in the population. Patients, healthcare professionals and caretakers should take integrated measures to reduce medication non adherence and thence to reduce the burden of disease in the general population. In our study, forgetfulness 78% was the leading cause for non-adherence followed by doubt in the healing power of medicine, adverse effect profile, cost of medication so on and so forth. Attempts to address these hurdles on individual basis can go a long way in reducing the unnecessary burden on the health care system and

eventually will lead to better well-being of an individual and of the community by and large.

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