

A qualitative study investigating perceived barriers to medication adherence in chronic illness patients of Karachi, Pakistan

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Abstract

Objective: The study aimed to perceived barriers to medication adherence in patients with chronic illnesses.

Methods: A qualitative study was conducted in a tertiary care hospital in Karachi in September 2017, using grounded theory and inductive approach. Interviews were conducted using a checklist in Urdu language from patients of chronic illnesses determined based on medicines dispensed from the out-patient pharmacy in hospital. Interviews were recorded, transcribed verbatim, translated in English and validated. The translated quotations were analysed using a qualitative analysis software, and thematic analysis was conducted. Codes were generated and analysed by semantic linkages and network analysis using ATLAS.ti qualitative research software.

Results: Of the 16 patients interviewed, 8(50%) were males and 8(50%) were females. Barriers to medication adherence identified were patient behaviour (intentional and un-intentional non-adherence), comorbidity and pill burden, cost-related non-adherence, and low patient knowledge. The last barrier was associated with the rest.

Conclusion: Counselling has the potential to increase patient knowledge regarding medication use, and active pharmacist-physician collaboration can improve medication adherence.

Keywords: Medication adherence, Qualitative, Chronic illness, Patients, Pakistan.

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Introduction

Adherence to medication therapy in chronic illness is important to achieve positive health outcomes and improvement in health-related quality of life (HR-QOL).¹ Evidence indicate that medication adherence is associated with better disease state management, less exacerbation and complications, reduced hospital admissions as well as less financial costs.² Non-adherence to pharmacotherapy may produce results to the contrary. Studies have reported that patients who do not comply with their prescribed drug regimen suffer from clinical and economic consequences.¹⁻³

A study explored this phenomenon and reported several reasons that patients present as a barrier to medication adherence.⁴ These may include a mix of reasons from forgetfulness to regime complexity, out-of-pocket

expenditures, cultural fears, etc. In addition, qualitative analyses have proposed several conceptual models for addressing barriers to medication compliance.⁵ These models mentioned patient-related factors such as forgetfulness, knowledge and perception regarding medication therapy, difficulty in administering a complex regimen, pill burden and experiencing an adverse drug event.³⁻⁵ Besides, medication-related factors such as cost and effectiveness of medicine, etc.. are reasoned as potential barriers.⁶ Some other factors such as logistical issues and availability of drug are also presented in literature.⁷

Pakistan has one of the highest numbers of chronic patients in the world i.e. approximately 80 million.⁸ Ischaemic heart disease (IHD) along with cerebrovascular illness is the leading cause of death among Pakistani patients.⁹ Figures from the Global Burden of Disease (2010) report highlighted that non-communicable diseases have replaced communicable diseases as the leading cause of death and approximately 3.87 million premature deaths owing to chronic illnesses are expected by 2025.¹⁰ Despite

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these appalling figures related to chronic illness, medication adherence has never been considered a cornerstone of disease state management. Available literature highlights that medication adherence practice of chronic illness patients is poor.¹¹ However, patient perspective towards non-adherence to pharmacotherapy has never been investigated. The current qualitative study was planned as a novel attempt to explore perceived barriers towards medication adherence.

Subjects and Methods

The qualitative study was conducted at Clifton Central Hospital, Karachi, a tertiary care facility, in September 2017, using grounded theory and inductive approach. A qualitative design was preferred to explore all possible opinions and perceptions of patients which may not be adequately extracted in any other study design.¹² As it was the first such study in Pakistani patients, the qualitative approach was likely to help highlight localised determinants that hinder concordance to medication therapy in this population.¹³ This novel qualitative data was thought to formulate a hypothesis that could be further tested in future. The study was designed in line with the consolidated criteria for reporting qualitative research (COREQ) guideline.¹⁴

The study comprised patients with chronic illnesses, a status determined on the basis of the medicines that were being bought at the out-patient pharmacy of the hospital. Data was collected every Friday evening 6-7 pm. The selection of these timings was based on peak patient visiting hours. The interview was conducted in the consultation room located within the pharmacy that ensured patient confidentiality as well as clear audio recording. The average duration of interview was 13-15 minutes. The interviewers were two male pharmacists and one medical practitioner. One pharmacist had bachelor's qualification in pharmacy with a two-year relevant work experience. The other pharmacist and medical practitioner had postgraduate qualifications with more than 10 years of work experience in Pakistani healthcare system.

The respondents were chronic illness patients with long-term medication therapy management. Patients visiting the pharmacy during study hours were noted by observing their prescription. If their prescription contained medications related to a chronic disease, the pharmacist confirmed their information. The patients were

subsequently briefed about the study and were invited to participate. Consenting patients were taken to the pharmacy consultation room and interviewed. Patients who were unable to understand or communicate, thereby requiring a caregiver's help, were excluded. Purposive sampling was employed and patients were interviewed until data saturation was reached. Data saturation was reached in the 13th interview session, but we extended the study and conducted another three interviews to confirm the saturation. Those who refused to participate were also excluded.

An interview checklist was prepared containing questions related to demographic information of patients, disease information and a probing question of potential barriers in adherence to medication therapy. The language used in the interviews was Urdu since it is the national language of Pakistan. An audio recorder was used to record patient response to the last question. This record was transcribed verbatim in Urdu language. The transcription was re-checked for accuracy with simultaneous audio playing. The patients were also shown their transcripts. After validation of the Urdu transcript, it was handed to two independent researchers who translated the text in English language. This draft was sent to an external reviewer to ascertain its suitability. Some of the conflicting statements of patients such as use of proprietary name of medicines were censored as well as any disagreement in translation was sorted out at this point. The final English transcript was read by two researchers line-by-line (Figure 1).

These translated quotations were analysed using ATLAS.ti Scientific Software Development GmbH, version 8.1.29.015 and a thematic analysis was conducted. Codes were generated and analysed by semantic linkages and network analysis.

The study was approved by the institutional review board of Clifton Central Hospital as well as Allied Med Ethics i.e., institutional review board of P.E.C.H.S Trauma and General Hospital, Karachi. The original audio-recording was retained by the committee and this was explained to the subjects before they were interviewed.

Results

Of the 16 patients interviewed, 8(50%) were males and 8(50%) were females, 7(44%) were employed, 9(56%) had monthly family income up to PKR 50,000, 8(50%) suffered from hypertension (HTN), and 9(56%) had 3-5 medicines per prescription (Table-1).

I do not take medicine when feel better (M01)

I forget to take medicine. But take double dose on recalling. (F02)

I have hypertension diabetes, arthritis and anemia. I must take 7 (seven) medicines. I do not understand which drug should be taken at what time. Which drug should be taken with empty stomach? Which drug should be taken after food? I came to know after 3 months that the Iron should be taken with empty stomach and pain killer after food. (M03)

I take medicines on time however, sometimes I drop night time dose when my sugar is in desirable range otherwise my sugar becomes low. (M04)

Sometime I arrive late from programmes (social gatherings etc.) and miss the dose of that time. (M05)

My friend same of the medicines are very expensive for example (name of a generic medicine containing diclofenac sodium and misoprostol) that I take it only when the pain becomes intolerable. (M06)

I forget (to take medicine) when I am outside from home for a long time. (M07)

I take 5 medicines daily. Two for hypertension one for diabetes, one for shoulder pain and another for abdominal discomfort. A (name of brand multivitamin) vitamin as well. The drug (name of a generic medicine containing omeprazole) is useless which is used for abdominal discomfort. It disturbs my digestion and is expensive as well. (M08)

It takes 2 to 4 days to understand the schedule of medicines. (F09)

I find it very hard to memorize the timing (of dose). (M10)

The antibiotics are very expensive medicines. The cheap medicines do not work. I purchase the expensive medicines only and take in less dose (less than the dose mentioned in prescription) so that it can be used for more days. (M11)

I discontinued tablets (used) for health and well-being (dietary supplements) as they were of no benefit. (F12)

Medicine improves knee (relieves knee pain) for time being until the food is cooked. The pain starts again after that Doctor told that take medicine when (I) feel pain but it disturbs my stomach. I do not take it. (F13)

This inhaler is very expensive so I use few time (less than as advised by doctor) only. (M14)

I had cataract after using steroids tablets. I feel punished by (cost of) 70 thousand (rupees) after taking 1 rupee tablet. Now I feel breathlessness but do not take (steroid) tablet. (F15)

I urinate a lot due to night time (dose). (M16)

I feel discomfort in abdomen after taking the drug prescribed for knee pain. I, therefore, supply some ointment by myself. (F17)

میں دوائی نہیں لیتا جب طبیعت بہتر محسوس کرتا ہوں۔ (M01)

مجھے یاد نہیں رہتا کہ دوا لینی ہے، بعد میں یاد آتا ہے تو ڈبل ڈوز لیتی ہوں۔ (F02)

مجھے ہائی بلڈ پریشر، شوگر، گھٹنوں کی تکلیف اور خون کی کمی ہے۔ مجھے اکھٹے سات دوائیں کھانی ہوتی ہیں۔ سمجھ نہیں آتا کونسی دوائی کب کھانی ہے۔ خالی پیٹ کونسی کھانی ہے، بھرے پیٹ میں کونسی۔ تین مہینے کے بعد بتہ چلا کہ آئرن کی گولی خالی پیٹ کھانی تھی اور درد کی کھانے کے بعد (M03)

میں عام طور پر دوا ٹائم پر لیتا ہوں مگر کبھی شوگر صحیح ہوتی ہے تو رات والی گولی چھوڑ دیتا ہوں ورنہ شوگر لٹو پو جاتی ہے۔ (M04)

پروگراموں (ملنے جلنے کی تقریبات) سے آتے آتے دیر ہو جاتی ہے تو اس ٹائم کی دوا مس ہو جاتی ہے۔ (M05)

یار کچھ دوائیں اتنی مہنگی ہوتی ہیں جیسے (ایک جنرک دوا کا نام جس میں ڈائکلو فینک سوڈیوم اور میزوپروستول ہیں) کہ جب درد برداشت نہیں ہوتا تب ہی لیتا ہوں۔ (M06)

میں کبھی گھر سے زیادہ دیر باہر رہتا ہوں تو (دوا لینا) بھول جاتا ہوں۔ (M07)

میں روز پانچ دوائیں لیتا ہوں۔ دو بلڈ پریشر کی، ایک ذیابیطس کی، کندھے کے درد کی اور پیٹ کی گرمی کیلئے۔ ایک (ملٹی نیشنل برانڈ ملٹی وٹامن) وٹامن بھی۔ پیٹ کی گرمی ووالی دوا (ایک جنرک دوا کا نام جس میں اومپرازول ہے) بالکل بیکار ہوتی ہے۔ ہاضمہ خراب کر دیتی ہے اور مہنگی الگ ہے۔ (M08)

دوائوں کا شیڈول سمجھنے میں دو چار دن لگ جاتے ہیں۔ (F09)

مجھے سب سے زیادہ مشکل (دوا کی) ٹائمنگ یاد رکھنے میں ہوتی ہے۔ (M10)

یہ اینٹی بائیٹک اتنی مہنگی دوائیں ہوتی ہیں۔ سستی والی اثر ہی نہیں کرتی۔ میں مہنگی والی ہی لیتا ہوں مگر ایک ایک کر کے (نسخے میں تجویز کردہ خوراک سے کم) لیتا ہوں تاکہ زیادہ دن چل جائے۔ (M11)

طاقت کی گولی (ڈائٹری سپلیمنٹس) سے کوئی فائدہ نہیں ہوا تو چھوڑ دی۔ (F12)

دوا وقتی طور پر گھٹیا (کا درد) صحیح کر دیتی ہے کھانا پکانے تک۔ اسکے بعد درد پھر سے ہو جاتا ہے۔ ڈاکٹر نے کہا تھا جب درد ہو تب لیں لیکن میرا پیٹ خراب ہو جاتا ہے۔ میں لیتی۔ (F13)

یہ انہیلر بہت مہنگا ہوتا ہے میں کم کم استعمال (ڈاکٹر کے بتائے ہوئی ہدایات سے کم) کرتا ہوں۔ (M14)

اسٹرائیڈ کی گولی لینے سے میری آنکھ میں موتیہ آگیا۔ ایک روپے کی گولی کھانے سے ستر ہزار کی پھیٹی لگ گئی۔ اب سانس خراب رہتی ہے مگر گولی نہیں لیتی۔ (F15)

میری دوا جو رات والی ہے اس سے پیشاب بہت آتا ہے۔ (M16)

گھٹنے کے درد کیلئے جو دوا دی ہے اس سے پیٹ میں جلن بہت ہوتی ہے اسلئے میں خود ہی مرہم لگا لیتی ہوں۔ (F17)

Figure-1: Patient transcript with English translation.

Table-1: Participants' information.

Characteristics	Frequency
Gender	
Male	8
Female	6
Employment	
Employed	7
Unemployed	5
Household activities	4
Monthly family income	
Less than PKR 10,000	1
Up to PKR 25,000	2
Up to PKR 50,000	9
More than PKR 50,000	4
Chronic illness	
Cardiovascular	8
Endocrine	5
Pulmonary	3
Medicines per prescription	
1 - 2 medicines	5
3 - 5 medicines	9
More than 5 medicines	2

The first theme identified was patient behaviour (unintentional non-adherence), such as unintentional non-adherence to medicines i.e. forgetfulness or being occupied with some activity as well as during travel and leisure.

"I forget to take medicine. But take double dose on recalling." (F02)

"Sometimes I arrive late from the programmes (social gatherings, etc.) and miss the dose of that time." (M05)

"I forget (to take medicine) when I am outside from home for a long time. (M07)

I find it very hard to memorize the timing (of dose)." (M10)

The second theme identified was patient behaviour (intentional non-adherence, like discontinuing their medication therapy in response to feeling better/asymptomatic and anticipating or suffering from an adverse drug reaction.

"I do not take medicine when feel better." (M01)

"I take medicines on time however, sometimes I drop night time dose when my sugar is in desirable range otherwise my sugar becomes low" (F13)

"I had cataract after using steroids tablets. I feel punished by (cost of) Rs70,000 after taking a 1-rupee tablet. Now I feel breathlessness but do not take (steroid) tablet." (F15)

"I urinate a lot due to night time (dose)." (M16)

"I feel discomfort in abdomen after taking the drug prescribed for knee pain. I, therefore, apply some ointment by myself." (F17)

The third theme was additional disease and pill burden. Comorbid patients expressed difficulty in remembering to take their medications at the right time and in the correct doses.

"I have hypertension, diabetes, arthritis and anaemia. I must take seven medicines. I do not understand which drug should be taken at what time. Which drug should be taken on empty stomach. Which drug should be taken after food. I came to know after 3 months that the iron tablets should be taken on empty stomach and pain killer after food." (M03)

"I take 5 medicines daily. Two for hypertension, one for diabetes, one for shoulder pain and another for abdominal discomfort. A [name of brand multivitamin] vitamin as well. The drug [name of a generic medicine containing omeprazole] is useless which is used for abdominal discomfort. It disturbs my digestion and is expensive as well." (M08)

The fourth theme was financial constraints and low perceived value of medicines. Some patients mentioned that the medicines were quite expensive, and it was difficult for them to purchase. Moreover, some patients said that those expensive medicines were not worth the money spent buying them.

"My friend, some of the medicines are very expensive. For example, [name of a generic medicine containing diclofenac sodium and misoprostol] that I take only when the pain becomes intolerable." (M06)

"I take 5 medicines daily. Two for hypertension, one for diabetes, one for shoulder pain and another for abdominal discomfort. A [name of brand multivitamin] vitamin as well. The drug [name of a generic medicine containing omeprazole] is useless which is used for abdominal discomfort. It disturbs my digestion and is expensive as well." (M08)

"The antibiotics are very expensive medicines. The cheap medicines do not work. I purchase the expensive medicines only and take in less dose (less than the dose mentioned in prescription) so that it can be used for more days." (M11)

"I discontinued tablets (used) for health and well-being

(dietary supplements) as they were of no benefit." (F12)

"This inhaler is very expensive, so I use only a few times (less than what is advised by doctor)." (M14)

The fifth theme was low patient knowledge. All the themes identified above had an element of low patient knowledge.

"I forget to take medicine. But take double dose on recalling." (F02)

"I do not take medicine when feeling better." (M01)

"I have hypertension, diabetes, arthritis and anaemia. I must take seven medicines. I do not understand which drug should be taken at what time. Which drug should be taken on empty stomach. Which drug should be taken after food. I came to know after 3 months that the iron tablets should be taken on empty stomach and pain killer after food." (M03)

"I take medicines on time. However, sometimes I drop night-time dose when my sugar is in desirable range otherwise my sugar becomes low." (M04)

"I had cataract after using steroids tablets. I feel punished by (cost of) Rs 70,000 after taking a 1-rupee tablet. Now I feel breathlessness but do not take (steroid) tablet." (F15)

"The antibiotics are very expensive medicines. The cheap medicines do not work. I purchase the expensive medicines only and take in less dose (less than the dose mentioned in prescription) so that it can be used for more days." (M11)

The quotations were subsequently coded. Two quotations were coded as additional diseases and three as pill burden. From the analysis, it was evident that the two codes were associated. These codes were merged together to form a concept of additional disease and pill burden which was further identified as a barrier to medication adherence. Besides, a total of six quotations were coded as financial constraints with additional two quotations coded as medicines unworthy of money spent. The latter was identified as a property of financial constraint. Financial constraint along with its property was identified as a part of concept i.e. cost-related non-adherence that was subsequently identified as a barrier to adherence. In addition, four quotations were coded as un-intentional non-adherence. Nine quotations were coded as intentional non-adherence. These two were merged into a single concept of patient behaviour which was also identified as a barrier. Five quotations were coded as low knowledge regarding drugs. This code was associated with patient

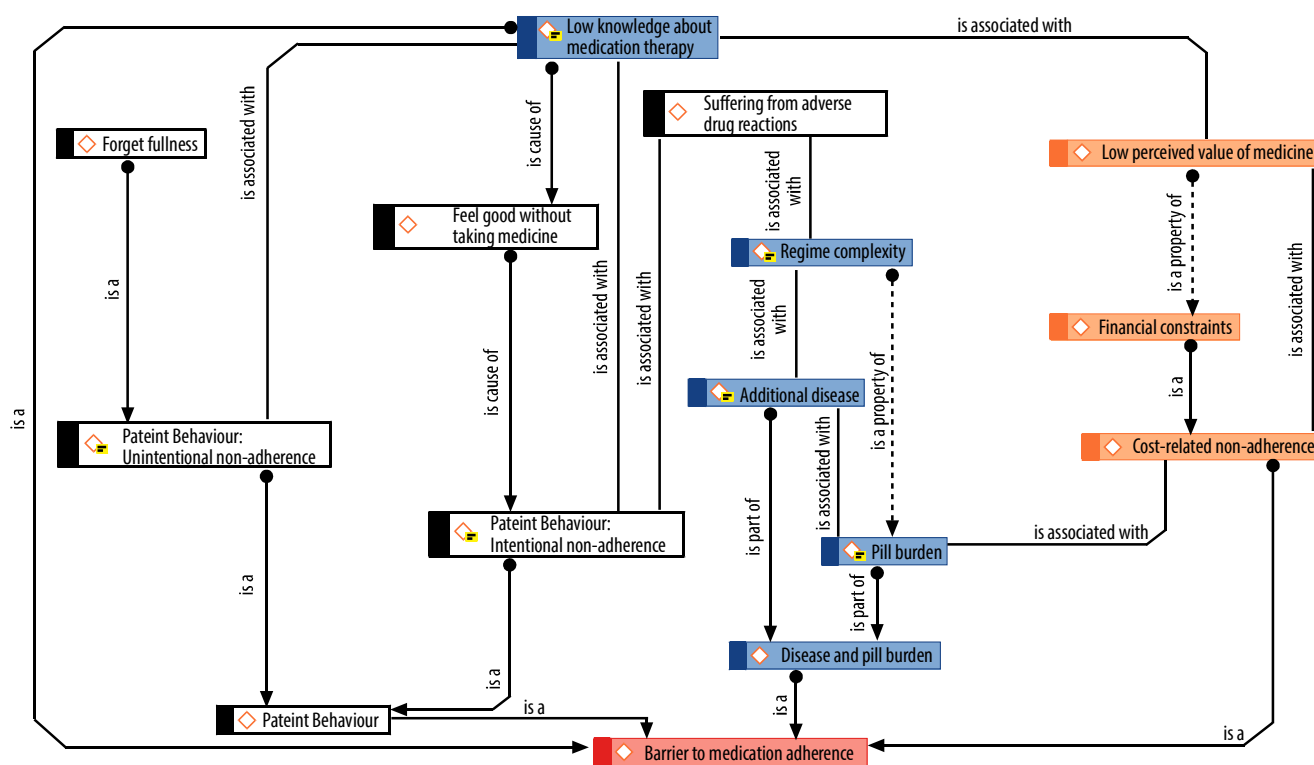


Figure-2: Conceptual model of barriers to medication adherence.

behaviour and was identified as a barrier to medication adherence as well. Semantic linkages were formed to create a conceptual model of barriers to medication adherence (Figure 2).

Discussion

The qualitative findings highlight that there are several barriers that hinder patients in being adherent to their pharmacotherapy. We identified⁴ our themes that pose as barriers to medication adherence. The patient behaviour included intentional and un-intentional non-adherence. The second major theme identified was cost-related non-adherence that further included financial constraint and medicines being perceived as un-worthy of the money spent (low perceived value). Comorbidity and pill burden was also identified as a theme that included pill burden and having an additional disease. Finally, low knowledge about medication therapy was identified as a theme.

Patient behaviour, such as deliberately not taking a medicine, has been reported in several qualitative researches around the globe. We found that Pakistani patients suffering from an adverse effect of medicines such as hypoglycaemia at night time and gastric discomfort following NSAIDs usage, deliberately ignored taking their medicine. In a study conducted on Malaysian diabetic patients, the investigators identified 'suffering from an adverse effect' as a barrier to anti-diabetic medication therapy.¹⁶ The use of NSAIDs is associated with gastrointestinal (GI) discomfort and bleeding. Evidence indicates that a relative risk of GI event following oral NSAIDs therapy ranges from 2.1% to 24.7%.¹⁷⁻¹⁹ A patient during interview mentioned not taking diuretic medication at night due to frequent urination. This may disrupt patient's sleep, thereby reducing his quality of sleep. This may be perceived negatively by the patient and hence decrease patient compliance. In this context, studies have reported lowest adherence rates to diuretics among cardiovascular drugs.^{20,21} Hence, this behaviour is in line with existing literature that reported same phenomenon in patients in the US.^{7,22} Furthermore, the act of forgetfulness was also evident from the findings in our study. Patients tend to forget their dose during travelling and social gathering. This phenomenon has also been reported from several studies that patient find it difficult to integrate medicine-taking schedule in daily life.²³

Low knowledge regarding medications was also evident

in our study. Patients who forgot to take medicines on time took missed dose along with the next one i.e. additional quantity of medicine. Similarly, patients who forego a dose deliberately to avoid suffering from an adverse effect, or felt generally well without taking the medicine, may not be aware of the implication of non-adherence. Hence, low knowledge was associated with patient behaviour.

Cost-related non-adherence (CRNA) was also reported by patients. Several studies have reported cost of treatment and medications as a potential barrier.^{6,24,25} This may force patients to forego treatment due to socio-economic adversities. Patients in Pakistan mostly pay direct medical costs.²⁶⁻²⁸ This was evident in our study as patients expressed their inability to pay for out-of-pocket medications. Moreover, patients' belief about medicines being not as effective as they are priced was also reported. This low perceived value of medicines was associated with CRNA which implied that patients may be inclined towards discontinuing medications if they found it difficult to pay for their medicines and believed that it is not providing them with therapeutic benefits that are equal to its monetary price.^{6,29} Low knowledge was also associated with this barrier as patients reported taking expensive medications in less quantity than the one prescribed so that it could be used for a longer period.

Having comorbidity increases the number of medicines prescribed i.e. pill burden. This may result in decreased adherence due to several barriers such as regime complexity, low knowledge regarding dosing schedule and high out-of-pocket expenditure. Studies have reported a relationship between complexity of pharmacotherapy and non-adherence.^{30,31} Furthermore, evidence indicates that the number of medicines per prescription had a negative impact on adherence in most cases.⁷ In some cases, additional medicines prescribed to non-comorbid patients i.e. pill burden alone contributed to non-adherence as well. This was due to low knowledge, increasing cost of medications as well as low perceived value of medicine. In summary, we found that low patient knowledge was a barrier to adherence and was also associated with other barriers.

Patient education and counselling is of paramount importance to supplement knowledge deficit in patients with chronic disease, and to emphasise the importance of medication compliance and consequences of non-adherence.³² Educating patients about correct use of

medicines, including dosing schedule and administration, may not only help in reducing likelihood of suffering from adverse drug reactions but also promote effective medication therapy.^{33,34} This may improve patient-perceived value of medicine with respect to its cost.²⁶ Moreover, a pharmacist-led substitution of a brand with generic medicine may help in reducing the out-of-pocket medication expenditure incurred on patients.³⁵ These activities could be achieved by an effective pharmacist-physician collaboration in Pakistani healthcare system.^{7,32,36} Additionally, overcoming these barriers to achieve compliance with prescribed medication may help in determining how adherent a patient is towards his/her medications.

Conclusion

Low patient knowledge was associated with several barriers such as patient behaviour, CRNA comorbidity, and pill burden. Patient counselling has the potential to increase patient knowledge regarding medication use and an active pharmacist-physician collaboration can improve medication adherence. Patient medication compliance despite these barriers may provide a measure of individualised medication adherence practice.

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