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Conventional medication adherence and self-treatment practices among South Asian immigrants: a qualitative study

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ABSTRACT

Introduction. Globally, cardiovascular disease (CVD) is a common cause of death. The highest CVD rate is among South Asian populations and South Asian immigrants have a higher risk of developing CVD than other ethnic groups. While treatment of established CVD risk factors is recommended, medication adherence may be poor. **Aim.** This qualitative study aimed to explore medication adherence practices of New Zealand South Asians who are prescribed medications for type 2 diabetes, and/or hypertension, and/or dyslipidaemia, established risk factors for CVD. **Method.** Twenty-one semi-structured telephone interviews were conducted with South Asians with type 2 diabetes, and/or hypertension, and/or dyslipidaemia. Data were transcribed, then analysed thematically using NVivo12. Codes and inductively derived themes were discussed. **Results.** Five themes with 12 subthemes were identified. The five themes included daily routine and medication adherence practices, perceived necessity of medications and concerns about side effects, concern and hesitancy to start conventional medications, integration of herbal and alternative therapies, and the role of healthcare providers and communication. **Discussion.** These findings highlight the importance of personalised approaches to medication management that consider patients' beliefs, daily routines, and cultural contexts to reduce CVD risk and improve health outcomes among South Asians.

Keywords: alternative treatments, cardiovascular disease risk, lifestyle changes, medication adherence, medication hesitancy, New Zealand, role of healthcare providers, South Asians.

Introduction

South Asians (SAs) are one of the three high-risk groups for cardiovascular disease (CVD) in Aotearoa New Zealand (NZ).[1–3] Most SAs in NZ are overseas-born[4] tracing their ancestry to Afghanistan, Bangladesh, India, Nepal, Pakistan, or Sri Lanka. While NZ data are limited,[3] national hospitalisation and mortality data suggest that Indians have high CVD hospitalisation rates,[5] a high ratio of CVD hospitalisations to deaths,[6] and high CVD mortality compared with other ethnic groups.[7]

Type 2 diabetes (T2D),[8] hypertension,[9] dyslipidaemia, and obesity[10] are established CVD risk factors. They are common among SAs, and often occur at a relatively young age and cluster. While the proportion of prescribed statins, anti-hypertensives, and anti-platelet therapy (all three) for these conditions is highest (67%) for the Indian SA population with CVD in NZ compared with other ethnic groups,[11] adherence can be poor thereby contributing to the high CVD rates among SAs.[12–14] Reasons for poor medication adherence include fear of side effects, cost, forgetfulness, high daily frequency of medication, language barriers, and lack of knowledge.[15] Additionally, some SA patients with CVD hold beliefs such as 'god's will' and hence little can be done to prevent disease progression,[16] and this may also influence adherence to prescribed treatments.

As up to 50% of patients with chronic conditions miss medication doses,[17] medication adherence tools can be beneficial. Reminder apps that deliver notifications to users' smartphones have been shown to reduce the number of missed doses, and regular reminders such as customisable schedules and recurring alerts help individuals establish

WHAT GAP THIS FILLS

What is already known: Established cardiovascular disease (CVD) risk factors disproportionately affect South Asians more than other ethnic groups.

What this study adds: New Zealand South Asians with modifiable CVD risk factors prefer lifestyle changes before being prescribed medication for type 2 diabetes, hypertension, or dyslipidaemia. Adherence to medication prescribed for these conditions is influenced by cultural practices, perceived need for and concerns about medication, and healthcare provider communication. Health professionals could play a key role in understanding and providing culturally appropriate advice on lifestyle changes for South Asians at risk for CVD.

medication-taking routines.[18] Many reminder apps now include advanced features such as medication tracking and adherence analytics, thereby enhancing accountability and encouraging better medication adherence and effective management of chronic conditions.[19]

No studies have examined medication non-adherence among SAs with CVD risk factors in NZ, yet understanding factors that influence medication adherence including use of adherence tools is critical. To address this lack of evidence, the SA CVD Risk Reduction project aimed to explore medication adherence practices, both intentional and non-intentional, among NZ SAs. The overall aims of the SA CVD Risk Reduction project were (1) to understand health beliefs, knowledge, and behaviour regarding changes in diet and physical activity levels to reduce CVD risk, and (2) to explore medication adherence practices among SAs with CVD risk factors. In this manuscript we report the findings on medication adherence practices of SAs prescribed conventional medicines for T2D, and/or hypertension, and/or dyslipidaemia.

Methods

Study design

The SA CVD Risk Reduction study involved an online survey and semi-structured interviews with SAs, defined as Indian, including Fijian Indian, Pakistani, Sri Lankan, Nepalese, Bangladeshi, or Afghanistani.[20] The University of Otago Human Ethics Committee granted ethics approval (reference number 22/143).

Inclusion criteria

Potential participants were SAs aged 35–65 years[1] with self-reported T2D, and/or hypertension, and/or dyslipidaemia who were prescribed medications for at least one of these conditions.

Participant recruitment

Participant recruitment was undertaken through SA community networks, with whom SP (Principal Investigator), MA (Associate Investigator), and SSA (Associate Investigator) are well connected. Advertisements were distributed through an established SA project stakeholder group, cultural and religious organisations, and Facebook and WhatsApp groups across NZ. Purposive sampling[21] was undertaken to ensure an equal number of male and female participants with a broad range of views that reflected the ethnic heterogeneity within and across NZ SA communities.

Data collection

Eligible participants were sent a participant information sheet (PIS) via email or text message to enable informed participation in the study. They were also sent a link to the study-specific Qualitrics (https://www.qualtrics.com, accessed 2022) survey that had an embedded PIS, a consent form, and a short questionnaire to capture demographic information and dietary and physical activity behaviours. In this manuscript we report only data about medication adherence that were collected via semi-structured telephone interviews undertaken by SSA and SP in English between April and August 2023. The interviews lasted between 25 and 50 min. Before each interview, participants were provided with an opportunity to ask questions about the study. The study aims and confidentiality measures were briefly discussed, and verbal consent was also obtained. Telephone interviews were conducted on a day and time convenient to participants. An interview schedule (Table 1), informed by the literature and discussion (MA, KC, SP, and SSA), guided the interviews and maximised consistency between interviews. All interviews were audio-recorded with participant permission and transcribed verbatim by SAA. A NZ $20 voucher was given to all participants as a token of appreciation.

Data analysis

Demographic data were exported to SPSS version 27 and analysed descriptively. The interview data analysis followed Braun and Clarke's guide for analysing qualitative data using a systematic coding process.[22] All authors read the transcripts. The transcripts were independently coded by SSA and MA, who developed and discussed a draft coding schema. SSA coded the transcripts using an inductive coding approach to identify recurring themes and patterns. MA reviewed the codes and any discrepancies or differences in coding were resolved through discussion and consensus between SSA and MA. SP and KC reviewed the theme development. The data and themes were discussed and finalised by SP using a consensus process. Discrepancies were resolved and agreed by consensus. This collaborative approach ensured a comprehensive and accurate interpretation of the data. A qualitative software package (NVivo, QSR International Pty Ltd,

Table 1. South Asian CVD risk reduction study: medication adherence probes.

Do you have diabetes, and/or high blood pressure, and/or high cholesterol?
Can you tell me about the medications you are currently taking for your health condition (diabetes, and/or blood pressure, and/or high cholesterol
Did your healthcare provider (doctor or pharmacist) tell you how to take your medications (including discussing adherence, ie you have to take your medication correctly as per your doctor's advice)?
Do you use any tools or reminders to help you remember to take your medications?
Can you walk me through your typical routine for taking your medications?
Are there any medications that you have missed taking recently? If so, how often do you miss doses?
Do you ever change the dose of your medication without talking to your healthcare provider? If yes, what's the reason for changing the dose?
Have you ever stopped taking a medicine before the end of the prescribed treatment period? If yes, why?
Do you have any concerns or questions (like side effects) about your medications? If yes, what are those?
Have you ever bought your medications from 'your home country'? including traditional medicines such as herbs?
Do you take any herbal medications for your health condition? (diabetes, and/or blood pressure, and/or high cholesterol) If yes, what are they?

Melbourne, Australia, Version 12, 2018)[23] was used for data management and analysis.

Results

Twenty-one people were interviewed. The majority (62%) were aged 35–50 years and 52% were female. The majority were Indians (57%), with 14% Fijian Indians, 10% Sri Lankans, 10% Pakistanis, and 5% Nepalese. Most participants (67%) were long-term residents of NZ (defined as being resident for more than 10 years) with the remaining having lived in NZ for 5–10 years (14%) or less than 5 years (19%).

More than half (57%) of the participants had been diagnosed with at least two CVD risk factors of interest, that is, dyslipidaemia, T2D, or hypertension, with 48% having two conditions, and 10% all three conditions. Sixty-seven percent had dyslipidaemia, 57% had T2D, and 43% had hypertension. Those diagnosed with dyslipidaemia reported that they were prescribed a statin, such as Atorvastatin, Pravastatin, and Bezafibrate. Most of the participants diagnosed with T2D reported that they were prescribed Metformin once a day and two participants reported using long-acting insulin once a day. Participants diagnosed with hypertension were prescribed Diltiazem, Losartan, Cilazapril, Metoprolol, Felodipine, Bendroflumethiazide, or a combination of these medications once or twice a day.

The five themes that emerged from the thematic analysis are described below.

Theme one: routine and medicine adherence practices

Subtheme 1: establishing a medication routine

Many participants had established routines for taking their medications, often integrated into daily activities such as breakfast, morning coffee, after brushing teeth, or before bedtime.

> Normally at 10 o'clock at work, I take my Betaloc … right before I go to sleep, I take the other one at night. (Participant 16, Indian, 65 years, male)

> … I have my blood pressure medication as soon as I get up. Then, during lunchtime, I have the Metformin. Then, the evening before dinner, I have my other blood pressure (medicine). (Participant 15, Indian, 62 years, female)

Subtheme 2: missed doses

While some participants rarely missed doses, others mentioned missing them occasionally, especially when traveling or when their routine was disrupted.

> Very rarely, I miss my doses if I'm not at home. (Participant 1, Sri Lankan, 60 years, male)

Subtheme 3: use of a tool or app for medication reminder

Most participants had never used any tool or app to help with medication adherence. Only three participants reported using a Webster pack or remembered to take their medicine using a reminding tab packaging.

> This Betaloc® comes in that box which has got, … the day of the week …. No, I haven't tried any tools; I just tried to remember it. (Participant 16, Indian, 65 years, male)

Those who needed reminders mostly relied on a family member rather than a tool or an app, especially in the early stages of treatment.

> Initially when I started because it was not part of my life and now it is a part of my routine. So initially, yes. But later on no. (Participant 6, Indian, 36 years, male)

Theme two: perceived necessity of medications yet concerns about side effects

A common issue for participants was the perceived necessity of medications yet they had concerns about side effects.

Subtheme 1: commitment to taking medications

Many participants expressed a strong commitment to taking their prescribed medications, based on advice from their healthcare providers.

> … there is no way that I would ever stop that (taking statins). So, I (will) discuss it with my doctor before I ever

stopped that. (Participant 21, Fijian Indian, 54 years, male)

Subtheme 2: acceptance and management of side effects from medications

There were concerns about potential side effects of medications such as muscle pain with statins, although not all participants experienced them. However, many participants viewed side effects as an unavoidable aspect of taking medication while others consulted with their healthcare professional about changing their medication.

I know there would be some side effects. But it's like some things that needs to be done. Its better than getting a heart attack. (Participant 4, Fijian Indian, 46 years, male)

I used to have it (side effects), but I did change to a different medication. I used to get body pains from these medications, so I consulted my cardiologist, and then he moved me to a different one. (Participant 12, Indian, 37 years, male)

Theme three: concern and hesitancy to start conventional medications

Subtheme 1: younger participants' reaction to their diagnosis and prescribed medications

Younger participants were disheartened and anxious after a diagnosis of T2D, hypertension, or dyslipidaemia and being prescribed medication. They felt they were trapped in this lifetime condition and thought they were too young to be diagnosed with high cholesterol or T2D. Many participants thought that they could manage their condition(s) with diet and exercise, but this was not necessarily an option that their doctor had given them.

I'm concerned about that (long-term dependency). But at the same time, I don't want to go on something that I won't be able to get off …. I don't want to be dependent on any medications. (Participant 7, Fijian Indian, 47 years, female)

I wish I could reduce at least the dosage if possible, or if I really (can talk) with a dietician or (do) exercises, But I am not sure (what to eat healthily and how to exercise) to take the risk of it. I do not know what's happening inside. (Participant 20, Indian, 41 years, female)

Subtheme 2: younger participants' hesitancy and delay in commencing medication

Younger participants were more hesitant than older participants to start and continue their prescribed medications. Some participants reported skipping medications and trying lifestyle changes.

in the past … I stopped for a year or two? Yeah. After the clinician's advice? Yeah, because exercise, food, and salt are regular things within my control … Everything went normal … but due to other circumstances, like stressful conditions, again, my blood pressure was high. So again, I started taking it for the last year now. (Participant 11, Indian, 44 years, male)

Theme four: integration of herbal and alternative therapies

Subtheme 1: desire for alternatives

Some younger participants wanted to find alternatives to their prescribed medications as they did not like the idea of long-term dependency on prescribed medications and were continuously searching for a fix. Most older participants mentioned that in the past, they had tried using herbal supplements and naturopathic medicine to treat their dyslipidaemia, hypertension, or T2D.

I want to stop the medication, and I change my diet, and I try to be more conscious, it's too early (to be on such medications) … So I'm trying my best. I plan to stop this medication this summer by doing more exercise. (Participant 9, Indian, 42 years, female)

Yeah. So, medicines which contain Gymnema, such as Blackmores® sugar balance is one. Another is Healtheries® sugar balance … it reduces the sugar level in the body automatically and naturally. (Participant 10, Indian, 53 years, female)

I always thought that it's better at a certain point if I could use other techniques like food, controlling your diet and exercise. I could potentially stop taking Statin. (Participant 14, Nepali, 36 years, male)

Subtheme 2: cultural influences

Cultural beliefs significantly influenced participants' use of alternative therapies that could be categorised as home remedies. Many participants mentioned using traditional home remedies such as honey, or herbs such as curry leaves, garlic, cumin seeds, and cinnamon in addition to the prescribed treatment.

Raw organic celery seeds were used for high cholesterol. (Participant 3, Pakistani, 38 years, female)

I use that kind of cinnamon or fenugreek seeds, you know? … that is also very good for diabetes. They say Karela (Bitter gourd) is good. They say Jamun berries are very good for this. All that is good so that we can take it

in moderation as part of the diet. (Participant 10, Indian, 53 years, female)

Some participants reported that they regularly used foods that are known for treating T2D, high cholesterol, and hypertension.

I eat certain vegetables that help with diabetes. Have you heard of something called Ranaweera? … am from Sri Lanka, so they call it Detimesu and Ranaweera, which helps with this thing (diabetes) and blood pressure. (Participant 1, Sri Lankan, 60 years, male)

Subtheme 3: skepticism and limited use

While some participants used traditional medicines (other than home remedies), others were either skeptical about their effectiveness or not able to incorporate them, especially those from their home countries, into their health regimen due to access limitations.

I don't trust those (traditional medicines); I'm going to get it (medicines) from the right source. (Participant 8, Indian, 39 years, male)

Not these sorts of things, because in India, you got these other medicinal systems like Ayurveda and so on … but no (I don't use it). (Participant 16, Indian, 65 years, male)

Theme five: role of healthcare providers and communication

Subtheme 1: trust and adherence

Participants' adherence was closely linked to their trust in healthcare providers. This trust was fundamental to consistent medication use.

I always consult with my GP. I'll never take anything without their consultation and approval because if I do something stupid the blame will be on me. (Participant 13, Indian, 40 years, female)

I really believe him [doctor]. He gives good medicines. That's why I listen to him. (Participant 17, Indian, 61 years, female)

I want to stop taking Statin but will consult my GP and like, you know, that's like seeing how it goes because you know Statin is not something I can stop. (Participant 14, Nepali, 36 years, female)

Subtheme 2: desire for more information and communication gaps

Several participants expressed a need for more comprehensive information from their healthcare providers. Participants sometimes experienced uncertainty due to inadequate communication with their healthcare providers.

I asked the doctor in our community to send me some more information … we don't know which one to believe, like who to believe? The doctor just said that, you know, some things that prevent … (Participant 17, Indian, 61 years, female)

Discussion

This qualitative study explored the practices associated with medication adherence among SAs aged 35–65 years prescribed conventional medication for CVD risk factors, specifically T2D, and/or hypertension, and/or dyslipidaemia. Most had at least two of these conditions. Key themes from the interviews shed light on patient beliefs and behaviours, healthcare provider interactions, and the role of cultural practices on managing these conditions. Many participants expressed disappointment with their diagnoses, especially those who were diagnosed with at least one of these conditions in their early 30s. Disappointment and shock at being diagnosed with these long-term conditions, particularly T2D and prediabetes, has been observed in other studies.[24,25]

Adherence to prescribed conventional medications at the time of data collection was reasonably good among participants. This can in part be attributed to most participants' simple once or twice daily medication dosage regimens, which facilitated integration into their daily routines. In contrast, more complex drug regimens tend to negatively impact medication adherence.[26] However, many participants reported missing doses occasionally, particularly during travel or changes in routine. The tendency to miss doses was often coupled with a lack of formal tools or systems to aid adherence. Many participants relied on informal cues, such as family reminders, rather than structured systems such as smartphone apps or pill organisers. A meta-analysis showed a statistically significant increase in adherence in intervention groups receiving reminders compared to controls, suggesting a need for more robust reminder systems or adaptive strategies to prevent missed doses.[27] Although we did not find memory as a debilitating factor for medicine adherence in this study, a Canadian study that investigated factors influencing medication adherence in SA people with cardiac disorders recommended personalised memory mechanisms could improve medication adherence.[12] In addition, medication adherence has been shown to be better among SAs if their healthcare provider demonstrates clear communication and cultural awareness and if family provide support to take their medications.[28]

Most participants raised several concerns about being prescribed medications, particularly about long-term use related to side effects such as muscle pain. While most of these concerns were about potential rather than actual side

effects, specific instances of adverse effects were infrequently reported in this study. Medication side effects have been identified as a key barrier to adherence.[29] Nevertheless, trust in healthcare providers and their advice seemed to have facilitated adherence despite participants' concerns about side effects.

In this study, younger participants expressed a keenness to stop conventional medications and use alternative treatments such as lifestyle changes. While one participant requested health professional advice for lifestyle changes instead of starting medication and was provided with this as part of their treatment plan, another explicitly expressed they wished they could talk to a dietitian as they did not have the knowledge to be able to make healthy food choices. The lack of effective guidance and support for lifestyle changes for lifestyle-related conditions in the primary care setting has been described elsewhere, with barriers such as lack of clinician time often being reported.[30] An integrative review of health beliefs regarding CVD risk and risk reduction among SAs found insufficient guidance from healthcare providers was a barrier to CVD risk reduction,[31] highlighting the critical role of health professionals in addressing CVD risk factors such as dyslipidemia through healthy lifestyle changes.

Younger participants also reported that they were hesitant to start their prescribed medication, and many delayed starting it, opting to try self-guided lifestyle changes which were invariably unsuccessful. The primary reason for this hesitancy was the belief that there would be a life-long dependency on medication that they did not want. A preference for alternative medicines by some was mainly due to the perception that alternative medicines have no side effects, and the strong desire to avoid life-long dependence on conventional medication. Previous studies have shown that younger SAs show more interest in complementary and alternative medicine than older individuals, who may be unwilling to wait for symptom resolution.[32]

Previous studies have reported delays in SAs seeking healthcare providers' help or initiating treatment.[33] Some participants in our study who believed that their prescribed medication would harm them delayed or avoided the initiation of therapy, particularly among younger aged participants. Nevertheless, the role of healthcare providers, including doctors and health coaches, has been identified as pivotal in supporting medication adherence. Participants who received regular follow-up and personalised advice reported better adherence and improved management of their condition, which is consistent with other studies.[34] The need for clear communication about medication regimens and the importance of adherence was also emphasised, highlighting gaps where additional support could be beneficial.[35]

Limitations and areas for future research

The current study is unique in providing insights into adherence to medication prescribed for the management of CVD risk factors among NZ SAs. We used a qualitative study design due to the lack of previous knowledge in this area and adopted an exploratory approach. The study findings are limited to the sample of NZ SAs who participated. As SAs include people from various countries with diverse cultures, socioeconomic, and educational status, it is possible that we did not identify all factors such as religion that may also influence medication practices. Nevertheless, these findings corroborate with that found in SAs with CVD risk residing in other migrant-receiving countries such as Canada[12,13] and the UK.[16] It would be informative to interview SAs with elevated blood cholesterol levels but not on medication to investigate lifestyle changes and cultural appropriateness of health professional advice, if any was received at the time of diagnosis. Additionally, this study could be extended to understand the decision-making processes of SAs, including the perceived benefits/limitations of conventional medications and complementary and alternative medicines and knowledge about the health consequences of delayed treatment, especially among SAs aged in their 20–40s.

Conclusions

This study revealed complex and multifaceted factors influencing medication adherence among SAs with CVD risk factors living in NZ. The critical role of routine in adherence, the balance between perceived necessity and concerns about side effects, and healthcare provider communication all influenced patient behaviour. There was a tendency to blend traditional and modern medical practices, often influenced by cultural beliefs and a hesitancy to take prescribed conventional medicines, often leading to delays in treatment, and in some cases pluralistic health choices. These factors highlight the importance of investigating medication practices among SAs, especially younger aged SAs, to reduce their risk of developing CVD. The desire of participants to first try healthy lifestyle changes prior to starting any medications was strong, yet many had not had the opportunity, highlighting the importance of health professionals providing culturally appropriate lifestyle change guidance, which is recommended and has been shown to reduce CVD risk factors in SAs.[36] Overall, these findings underscore the importance of a personalised approach to CVD risk management, considering not only the clinical aspects but also the cultural context, beliefs, lifestyle adjustments, and communication needs with healthcare providers. Addressing these elements holistically may improve adherence and overall health outcomes in diverse patient populations.

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