Exploring barriers and facilitators of primary care physicians towards optimising statin therapy in patients with hyperlipidaemia in the very high-risk group: a qualitative study in Singapore

Chun Yen Beh,1 Rose Wai-Yee Fok,2 Lay Hoon Goh3

ABSTRACT

Objectives To explore the perspectives of primary care physicians with regard to the barriers and facilitators towards optimising statin therapy in patients with hyperlipidaemia in the very high-risk group.

Design Qualitative descriptive study.

Setting Four polyclinics in a public primary care institution in Singapore.

Participants Seven men and five women working as primary care physicians were recruited for in-depth interviews.

Results The major barriers to statin optimisation identified were patients’ lack of knowledge and awareness, patients’ fear of side effects, negative external influences on patients, poor doctor–patient relationship, time constraint during consultations, physicians’ unfamiliarity with guidelines, low health literacy among the local population and lack of strong national policy. The major facilitators identified were patient education, providing continuity of care, improving electronic medical record systems’ capabilities, physician education and public education.

Conclusion We identified several important barriers and facilitators of statin therapy optimisation in this study. This information offers insights into the development of a multipronged approach to address barriers across different levels with the aim of optimising statin use, reducing cardiovascular events and improving patient outcomes.

INTRODUCTION

Cardiovascular diseases (CVDs) are the leading cause of mortality worldwide.1 Dyslipidaemia is known to promote atherosclerosis and is a major risk factor for adverse cardiovascular events.2 3 Statin therapy has been shown to be effective in reducing cardiovascular events. For every 1 mmol/L reduction in low-density lipoprotein (LDL) cholesterol, statin reduces major vascular events (coronary death, non-fatal myocardial infarction, coronary revascularisation or stroke) by just over one-fifth.4 In view of this, multiple practice guidelines in the USA, Europe and Singapore have recommended statin intensification for patients at very high risk of CVD events.

In Singapore, the current clinical practice guideline defines very high-risk group as individuals with established coronary artery disease, atherosclerotic cerebrovascular disease, aortic aneurysm, peripheral artery disease, diabetes mellitus with chronic kidney disease or familial hypercholesterolaemia.5–7 Despite the evidence, treatment with statin remained suboptimal in these patients globally as well as in Singapore leading to increased cardiovascular risk.8 9

There are many factors which can contribute to undertreatment of statins. Patients’ fear of perpetual dependence on statins, side effects, imperceptible benefits, medical distrust and financial strain contribute to barriers towards optimising statin therapy.10–12 Physicians on the other hand felt that patients’ sociodemographic status, lack of knowledge, nocebo effect, media influence as well as physicians’ lack of knowledge, lack of perceived responsibility, concerns of risk–benefit ratio and...
disagreement with guideline recommendations as some of the barriers towards optimising statin therapy.\textsuperscript{13–15}

Increasingly, primary care physicians (PCPs) are involved in providing holistic and personalised care for patients ranging from managing acute and chronic conditions to providing preventive care.\textsuperscript{16, 17} Locally however, not much is known about the barriers PCPs faced when optimising statin therapy in patients with hyperlipidaemia in the very high-risk group. Our study therefore aims to explore the perspectives of PCPs with regard to the barriers and facilitators towards optimising statin therapy in patients with hyperlipidaemia in the very high-risk group.

**METHODS**

**Study design**

We used a qualitative descriptive study to explore the PCPs’ perspectives on barriers and facilitators when optimising statin therapy in patients with hyperlipidaemia in the very high-risk group.\textsuperscript{18} We chose in-depth interviews over focus groups as it allows us to delve deeper into their perspectives which they may otherwise be uncomfortable to share with their peers.\textsuperscript{19}

A semistructured interview guide was developed based on a review of existing literature and discussion with the study team members.\textsuperscript{13–15, 20} This guide was then pilot tested with two practising PCPs resulting in minor revisions (see online supplemental appendix 1). We used the Consolidated Criteria for Reporting Qualitative Research as our reporting framework.\textsuperscript{21}

**Conceptual framework**

We used the socioecological model (SEM) as our conceptual framework to guide data analysis.\textsuperscript{22} The SEM outlines the various factors (individual, interpersonal, organisational, community and public policy) that interact and contribute to patients’ health behaviours. At the same time, it also implies that interventions must address multiple levels in order to achieve effective and sustainable success in statin optimisation in patients with hyperlipidaemia in the very high-risk group.

**Participant selection**

PCPs were recruited from four National University Polyclinics located in Clementi, Pioneer, Bukit Batok and Choa Chu Kang estates in the western region of Singapore. These polyclinics serve a socioeconomically and ethnically diverse population with hyperlipidaemia being one of the major chronic conditions managed in these polyclinics. We used a combination of purposive and snowballing sampling strategies to recruit PCPs with maximum variation across age, gender, years of clinical practice and postgraduate qualification attained. PCPs need to be active in clinical practice and have at least 1 year of experience in managing patients with hyperlipidaemia in the primary care setting.

An email was first sent to the various polyclinic heads to request for suitable PCP nominations to participate in this study. Upon receiving a reply, the individual PCPs were then sent an invitation email to participate in this study. Each participant is remunerated with a grocery voucher worth S$10 for their time.

**Data collection**

PCPs were recruited from August 2021 to February 2022. The interviews were conducted either in person or online via the video conferencing Zoom software. We obtained written informed consent before each interview. Participants were also required to complete a demographic survey form prior to the interview. Each interview lasted between 20 and 50 min and was mainly conducted by an experienced male family physician (CYB) who has been working as a family physician for more than 7 years and has been trained in qualitative research. All sessions were audio-recorded and transcribed verbatim. Confidentiality was maintained by de-identifying the transcripts and demographic survey forms. The interviews continued until data saturation was reached when no new information emerged from the interviews.\textsuperscript{23} All the recordings, transcripts, coding, field notes and reflexive notes were organised in a secure electronic archive to establish a clear audit trail.

**Data analysis**

We applied the Braun and Clarke six-stage thematic analysis framework in our analysis.\textsuperscript{24} The primary coders (CYB, RW-YF) read through the transcripts independently to familiarise with the data. Line-by-line coding was conducted to generate a list of initial codes. The study team members (CYB, RW-YF, LHG) then met and organised the separate data into meaningful groups to create a codebook. These codes were then collated into potential themes, gathering all the data relevant to each potential theme. The themes were reviewed in relation to the coded extracts and the entire data set. Themes were further refined, defined and named. Any disagreements were resolved through discussion with the study team members. Data analysis was supported by QSR NVivo (released in March 2020). Participant demographics were summarised using descriptive statistics.

**Patient and public involvement**

Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

**RESULTS**

In total, 12 PCPs (three PCPs from each polyclinic) were approached and all were recruited for the study. Eleven interviews were conducted via the video conferencing Zoom software and one interview was conducted in person in a private room at the participant’s workplace. Only the interviewer and participant were present during
the interviews and no repeat interviews were needed. Six of the participants have met the interviewer before in various training sessions organised by National University Polyclinics. However, there is no dependent or direct reporting relationship between them and they work in different polyclinics.

Table 1 outlines the demographic characteristics of the PCPs in this study. Majority of the participants are Chinese.

Several major themes were identified during the first nine interviews. Data saturation was confirmed after conducting an additional three interviews. We categorised the themes into barriers and facilitators. Figure 1 outlines the conceptual framework used to organise these themes into the relevant domains. The barriers and facilitators within each domain will be further described below.

Domain 1: individual factors

Barriers (individual)

Lack of knowledge and awareness

Patients’ lack of knowledge and awareness on the importance of statin optimisation was regularly cited as a barrier by the participants. Some PCPs felt that patients sometimes do not understand the condition and consequences of suboptimal control of hyperlipidaemia well and hence are reluctant to optimise their statins.

…they feel well, so they don’t see why they need to hit a certain target and so I guess you can lump it under a lack of understanding of their illness. (PCP12)

Some PCPs also felt that some of these patients were reluctant to initiate statins because they were worried that they had to rely on/take them as life-long medications.

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Table 1  PCPs’ demographics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Number (%)</th>
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<tbody>
<tr>
<td>Age, years</td>
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<tr>
<td>&lt;30</td>
<td>1 (8)</td>
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<tr>
<td>30–34</td>
<td>6 (50)</td>
</tr>
<tr>
<td>35–39</td>
<td>3 (25)</td>
</tr>
<tr>
<td>&gt;39</td>
<td>2 (17)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>7 (58)</td>
</tr>
<tr>
<td>Female</td>
<td>5 (42)</td>
</tr>
<tr>
<td>Ethnicity</td>
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</tr>
<tr>
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</tr>
<tr>
<td>Indian</td>
<td>1 (8)</td>
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<tr>
<td>Sinhalese</td>
<td>1 (8)</td>
</tr>
<tr>
<td>Years of clinical practice</td>
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<tr>
<td>&lt;5</td>
<td>1 (8)</td>
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<tr>
<td>5–9</td>
<td>5 (42)</td>
</tr>
<tr>
<td>10–14</td>
<td>4 (33)</td>
</tr>
<tr>
<td>&gt;14</td>
<td>2 (17)</td>
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<tr>
<td>Highest postgraduate qualification attained</td>
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<tr>
<td>Bachelor of Medicine, Bachelor of Surgery</td>
<td>2 (17)</td>
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<tr>
<td>Graduate Diploma in Family Medicine</td>
<td>3 (25)</td>
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<tr>
<td>Membership of the Royal College of General Practitioners</td>
<td>1 (8)</td>
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<tr>
<td>Masters of Medicine in Family Medicine</td>
<td>5 (42)</td>
</tr>
<tr>
<td>Fellowship of College of Family Physicians Singapore</td>
<td>1 (8)</td>
</tr>
</tbody>
</table>

PCPs, primary care physicians.

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Figure 1  Conceptual framework; modified four-tier socioecological model.
There are many patients who are frightened that if they start, then they cannot stop. This is another myth that many patients have. (PCP5)

A few PCPs mentioned that some patients were hesitant to increase the dosage of their statins because they were already on multiple medications/felt pill burden.

…a lot of times I think these patients already come with multiple medications and the last thing sometimes they want to hear is for us to increase one of their medications. (PCP2)

Fear of side effects
Majority of the PCPs mentioned patients’ fear of side effects as a common barrier to statin optimisation. This fear of side effects could be either perceived or experienced.

…perception of higher dose of statin being detrimental to their health and concerns about side effects of the medications. Some other patient may have experienced adverse effects already and perhaps to a different statin and they will be hesitant to increase dose of what they are currently on. (PCP7)

Facilitators (individual)
Patient education
Almost all the PCPs felt that patient education plays an important role towards facilitating statin therapy optimisation in patients with hyperlipidaemia in the very high-risk group.

…it’s overcoming the patient’s attitudes…and lack of knowledge about their disease. So maybe from the onset of the diagnosis…there needs to be education right from that point that the LDL is important. (PCP12)

To address patients’ fear of side effects, some PCPs suggested counselling on the risks and benefits of optimising statins, normalising the experience of taking statins, reassuring them that PCPs will be monitoring for side effects and that the medication can be stopped if it is unsuitable.

…so I always mention about the risks and benefits of the medication and most patients are willing to at least consider… (PCP7)
One is to reassure them that most people are taking the statins at the dose that they are being prescribed…and they are fine… (PCP5)
Once you explain to them (that) we will be checking the liver function…they are more amenable to starting statin therapy. (PCP1)
…after I’ve discussed…and assured them that even if they try the medicine and…they choose to stop down the line, it doesn’t put them in a worse off state…they tend to be quite okay to start the medication… (PCP11)

For some patients who are still hesitant to optimise their statins, some PCPs suggested managing them over several consultation visits with consistent messaging and education.

…at every visit…different doctors tell them the same thing that they have poor lipid control and then reinforcing the risk again…then perhaps they will be willing to. (PCP8)

Domain 2: interpersonal factors
Barriers (interpersonal)
Negative external influence
Majority of PCPs felt that negative influences from friends, family members or social media play a part in influencing a patient’s decision optimising statin therapy.

…factor that prevents patients from wanting to be on the medication is the concern of liver injury. And a lot of it is I think based on hearsays of their family and friends… (PCP11)
So it can be fake articles read on WhatsApp messages…it could be news website which have false news…so people fall for these things… (PCP5)

Poor doctor–patient relationship
Some PCPs felt that the lack of strong doctor–patient relationships can negatively affect patients’ decision to optimise their statin therapy.

How much of a trust does the patient have with regards to the doctor? Cause if it is like a transactional kind of encounter whereby I have seen the doctor the first time…and he tells me that I need to intensify my statin when the rest of the doctors haven’t done so, then sometimes they may want to ask for second opinion… (PCP3)

Facilitators (interpersonal)
Continuity of care
Many PCPs felt that seeing the same patient repeatedly over time helps build good doctor–patient relationship which in turn helps to facilitate statin therapy optimisation.

…having to see the same patient every time helps improve or defuse the barriers, and it actually helps patient to be more trusting to the doctors and believe that cholesterol medication is actually good for them. (PCP11)

Domain 3: organisational factors
Barriers (organisational)
Time constraint
Many PCPs cited time constraint as a major barrier towards statin therapy optimisation. For patients who
present with multiple medical problems, some PCPs prefer to prioritise the more urgent problems and leave statin therapy optimisation to the next visit in view of the time constraint.

…if I had a patient with these multifactorial issues…I usually get more cautious about the blood pressure and diabetes first. (PCP10)

…there might be too many medical conditions coexisted at the same time which we have to tackle at that one setting, so sometimes we might only be able to tackle something that is even more important than optimising the statin therapy… (PCP2)

Some PCPs also felt that inefficiencies of their electronic medical record systems contribute to the time constraint problem which further hamper their efforts to optimise statin therapy in very high-risk patients.

…with this new computer system…ordering medications especially if they have many medications takes up another few minutes. So yes…most of the time we really don’t have enough time to actually really do a proper advice and discussion with the patient on the side effects of the medication. (PCP8)

**Physicians unfamiliar with guidelines**
Some PCPs felt that doctors’ unfamiliarity with the clinical practice guideline affects statin therapy optimisation. They may be unfamiliar with patients’ risk stratification or optimising statin therapy.

…some physicians may not know that they (patients) are actually under that group (very high-risk), or they may not be aware of the guidelines. (PCP7)

So some doctors, they may not be aware…on how to…step up or optimise the statin. (PCP8)

**Facilitators (organisational)**
**Improve electronic medical record systems’ capabilities**
Some PCPs suggested for improvement of the electronic medical record systems’ capabilities to improve the efficiency of information gathering during a consult. One of them suggested for documentation of the LDL target in a section of the electronic medical record system that is easily passed from consult to consult.

…to clearly indicate the LDL target either in the past history or in… the care coordination note, so some information does get passed from consult to consult. (PCP7)

Another two PCPs suggested artificial intelligence capabilities to help improve the efficiency of information gathering.

…the thing that I want to do with this AI (artificial intelligence) is to be able to collate this information… (so) that the doctors don’t need to hunt around for it so that…AI can recognise that this is a patient who has hyperlipidaemia, therefore will automatically search available databases…and determine their risk category. (PCP6)

**Physician education**
A few PCPs suggested regular educational sessions to remind and update the physicians on the latest hyperlipidaemia guidelines. This in turn helps to facilitate statin therapy optimisation in patients in the very high-risk group.

…it would be helpful to have CME (continuing medical education) sessions… because when we did a CME on lipids…we…realised…there was an uptake of people addressing this concern. (PCP11)

**Domain 4: community and public policy factors**
**Barriers (community and public policy)**
**Low health literacy**
A few PCPs felt that low health literacy among the local population presents a barrier towards statin optimisation.

…a lot of Singaporeans haven’t fully embraced the concept of prevention… so health literacy is a big problem. (PCP12)

**Lack of strong national policy**
Additionally, some PCPs felt that there is lack of a strong push nationally to combat hyperlipidaemia. For example, compared with diabetes, there is not as much emphasis placed on hyperlipidaemia.

It’s more like competing for what knowledge does the ministry of health wants to put in the patient’s mind. So in the pecking order of things, cholesterol medicine will be quite low vs war on diabetes, Covid vaccination. (PCP5)

**Facilitators (community and public policy)**
**Public education**
To combat low health literacy among some of the local population, some PCPs suggested public education to help raise their knowledge and awareness of hyperlipidaemia.

…what can be done at the government level is to also provide education about the three most common chronic diseases in Singapore… (PCP8)

**DISCUSSION**
**Summary of study findings**
Our study found that the barriers to and facilitators for statin optimisation in the very high-risk patients were complex and act at various levels. This is further compounded by our strong Asian cultural myths and misconceptions. We applied the SEM to categorise these facilitators and barriers into the different domains which provided a framework to conceptualise strategies to manage across domains.
Individual and interpersonal domains
Lack of knowledge and awareness is universally recognised as a barrier to medication adherence.10 12 PCPs in our study acknowledged that patients’ lack of understanding of their illness and negative consequences of suboptimal control like cardiovascular events were major barriers to medication adherence. They felt that patients were reluctant to initiate statins out of fear of drug dependence, side effects and increased pill burden.

These same barriers of patients’ health beliefs, understanding and misconceptions were observed by Tolmie et al more than two decades ago which affected adherence to medication.25 Patients also reported uncertainties about the efficacy of statins, scepticism about overprescribing and mistaken perceptions that statins are indicated only for patients with serious health conditions.10 Additionally, medication adherence is also influenced by cultural beliefs such as the notion of modern medicines as harms and fatalistic orientations towards escalation of doses and polypharmacy.26 Previous studies have shown that patients with negative medication beliefs were more than twice as likely to be non-adherent as patients with positive beliefs, and those with greater concerns regarding medication were significantly less likely to adhere.27 28 Importantly, these beliefs about medicines have been shown to be potentially modifiable by patient education and counselling.29 Some strategies that could be employed include using familiar language for patient education, patient empowerment on the benefits of medication optimisation and combining individual risk assessment using computer programmes with a shared decision-making process.26 30

Healthcare literacy has been associated with disadvantaged social groups.25 This is supported by our study which found that negative external influence based on hearsay of patients’ families and friends exerts a profound influence on the patient, even above what the PCP prescribed. Public education should prioritise disadvantaged social groups to improve their health literacy and should include patients and their families. Our study found that patient education, counselling on the risks and benefits on optimal lipid control, normalising the experience of taking statins and providing reassurance that PCPs will be monitoring for side effects were important considerations of shared decision-making. These findings concur with a systematic review by Ju et al which showed that transparent and informed shared decision-making that addresses patients’ concerns and goals of care may improve patient satisfaction and medication adherence.10

Care continuity has been shown to have a positive association with medication adherence for statins.31 PCPs in our study noted that a doctor–patient relationship that is largely transactional as a major barrier and recommended care continuity with a dedicated PCP to build trust and provide effective communication with the same messaging to remove barriers. Studies have shown that communication in healthcare is highly correlated with better patient adherence, and training physicians in communication skills was associated with significant improvement in patients’ adherence.32

Organisational, community and public policy domains
Time constraint is a perennial barrier to multiple physician interventions including statin optimisation. Many PCPs in our study who manage patients with multiple medical issues prefer to prioritise the more urgent problems and leave statin therapy optimisation to the next visit. Furthermore, they also felt that the inefficiencies of the electronic medical record systems contributed to the time constraint and suggested the use of artificial intelligence capacity in information gathering and documentation in these systems. Hirsh et al proposed a strategy to overcome physician time constraints by incorporating a team-based approach with different team members working together with a harmonised protocol, monitoring and reinforcing adherence. In addition, another solution is to have a robust electronic medical record and use of reminder trigger systems, once non-adherence in a patient is detected.35

PCPs in our study felt that doctors’ unfamiliarity with clinical practice guidelines affects how they risk stratify patients and approach statin optimisation. They suggested regular continuing medical education sessions to update physicians on the latest hyperlipidaemia guidelines. Although a valid concern, a Dutch study found that even though Dutch general practitioners were aware of practice guidelines, they had intrinsic reasons for not prescribing optimal lipid-lowering medication, which included competing demands for other clinical care such as diabetes mellitus control, older age group or those with life-limiting comorbidities like cancer and dementia.14

Some PCPs in our study felt that there is a lack of a strong push nationally to combat hyperlipidaemia and not as much emphasis has been placed, compared with diabetes mellitus. Hence, a systematic approach is needed like the ‘War on Diabetes’ policy which specifically addresses the concerns of diabetes and is positioned to encourage a whole-of-society effort to reduce the burden of diabetes in the population and to keep people healthy as they age.34 Likewise, the World Heart Federation Cholesterol Roadmap advocated for policy interventions at the national level to conduct stakeholder dialogue and form a coalition to involve multiple stakeholders such as the Ministry of Health, Ministry of Finance, pharmaceutical companies, patient, caregivers, societies and academia to work together toward developing an adapted national roadmap, catering to local context and solutions.35

Our study has important implications for increasing the rate of optimisation of statin therapy in patients at very high risk of CVD. Although an approach tailored to meet the needs of individual patients may be ideal, strategies that could address barriers across several domains and build on facilitators identified by the PCPs in our study may prove to be more effective than those addressing barriers in a single domain. This in turn would lead to improved patient outcomes.
Strengths and limitations

To our knowledge, this is the first qualitative study exploring PCPs’ perspectives on barriers and facilitators to optimising statin therapy in patients with hyperlipidaemia in the very high-risk group in Singapore. Strengths of our study include broad sampling across four different healthcare centres, a robust coding process and using the six-stage thematic analysis framework to effectively capture all the themes from the PCPs’ interviews. Using the SEM as our conceptual framework gave us a holistic view of the barriers and facilitators to statin therapy optimisation.

Our study has some limitations. First, views of private PCPs and PCPs working in other public healthcare institutions were not explored in our study. Other important stakeholders such as patients and health administrators were also not recruited. Additionally, although we aimed to recruit PCPs with maximum variation across age and years of clinical practice, we noted that PCPs in this study were mainly in the 30–39 age group with 5–14 years of clinical practice. Our PCPs also lacked the diversity in terms of ethnicity which may otherwise provide richer cultural specific viewpoints for our study. Lastly, newer challenges such as statin optimisation in the context of a statin combination therapy were also not discussed in this study.

CONCLUSION

Our study identified several important barriers and facilitators of statin therapy optimisation at the individual, interpersonal, organisational, community and public policy levels. Importantly, patients’ lack of knowledge and awareness of statin optimisation and time constraints during a consult continue to be major barriers to statin optimisation. A stronger emphasis on patient education and improving the electronic medical record capabilities may help to address these barriers. Additionally, a holistic approach addressing barriers across different levels could prove to be more effective than those addressing barriers at a single level.

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Patient consent for publication Not required.

Ethics approval This study involves human participants and was approved by the National Healthcare Group (NHG) Domain Specific Review Board (DSRB) (reference 2021/00206). Participants gave informed consent to participate in the study before taking part.

Provenance and peer review Not commissioned; externally peer reviewed.

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REFERENCES