


Patient Experiences and Preferences Regarding Medication Cost Discussions Among Heart Failure Patients in Singapore: A Qualitative Survey

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Purpose: Cost of novel medications has increased worldwide, causing financial toxicity to heart failure patients. Patients can discuss medication costs with clinicians to manage financial burden, but such discussion can be uncommon. This study sought to investigate the experiences and preferences of heart failure patients in Singapore regarding medication cost discussions to develop effective strategies to encourage such conversations.

Patients and Methods: Participants were recruited from a hospital outpatient heart failure clinic in 2022 to participate in a qualitative survey containing open-ended questions. Inclusion criteria were patients aged 21 years and above, diagnosed with heart failure, and capable of comprehending English. There were no exclusion criteria. Conventional content analysis was performed on collected responses.

Results: Among forty-eight heart failure patients (median age: 63.5 years, 43.8% male, 72.9% Chinese) who participated, most (93.8%) wanted to discuss medication costs with clinicians for reasons such as concern over affordability, taking ownership of health, making informed decisions, minimizing inconvenience, and obtaining tailored cost information. Affordability of medications was a concern for patients but only 8.3% of patients actually had regular cost discussions with clinicians in the past year. Patients mentioned a lack of initiative from the clinicians, limited cost awareness, and time constraints as reasons why cost conversations did not happen.

Conclusion: Outpatient heart failure patients in Singapore desire to discuss medication costs with clinicians but few participants reported having such conversations. Barriers hindering cost discussions have to be addressed to ensure patients make an informed medication decision with minimal financial burden.

Keywords: cost discussion, decision making, patient experience, patient preference, heart failure

Introduction

Over the past few years, the cost of medications has increased significantly,^{1,2} resulting in financial hardship commonly termed as financial toxicity for many patients. The financial burden associated with these drugs has forced patients to make difficult choices that affect their daily lives.³ This has led many patients to forego necessary medical care in the form of non-adherence or the deferral of non-essential needs.⁴⁻⁷

Financial toxicity can be particularly serious among patients with long-term illnesses that require chronic medications,⁸ especially for those with heart failure disease. The introduction of new treatments such as angiotensin receptor neprilysin inhibitors (ARNIs) and sodium glucose cotransporter 2 inhibitors (SGLT2i) have transformed the management of heart failure in recent years.^{9,10} These drugs have been shown to improve outcomes by reducing mortality and hospitalization rates,¹¹⁻¹⁴ but their cost remains a major concern.^{15,16} For instance, the unsubsidized cost of ARNI in Singapore is around S\$80-90 per month, which is ten times higher than the cost of the next best alternative, angiotensin-converting enzyme inhibitors (ACEIs), which only cost S\$6-10 per month. A recent survey in the United States revealed that heart failure patients were only willing to

pay US\$15 per month more for ARNI than for ACEI, raising questions about the cost-effectiveness of the novel medication from the patient's perspective.¹⁷ It is important to note that heart failure medications need to be taken lifelong, and ARNI is only one of several drugs that patients need to take daily. This raises concerns that heart failure patients in Singapore could experience financial stress as a result of the cost of the current heart failure regimen.

To address the above issue, patients should be given the opportunity to discuss medication costs with their clinicians.³ Ideally, the cost of medications should be considered as part of the decision-making process for treatment options, allowing patients to choose medications based on their preferred value. Studies indicated that discussing medication costs with clinicians could be beneficial in reducing the negative impact of financial toxicity, as it allowed patients to express their financial concerns.^{6,18,19} Research had shown that up to 96% of patients in the United States wanted to discuss costs with their clinicians,^{20–23} yet only 14% to 58% were able to have such discussions,^{5,8,22,23} highlighting a significant gap between patient expectations and reality. To close this difference, it is crucial to identify what patients desire from cost discussions and what factors are preventing discussions from occurring. The literature had highlighted several barriers to cost discussions,^{3,24,25} but these studies were predominantly based on the United States' private healthcare system which operates very differently from Singapore's government run public system. Notably, no study to date has explored medication cost discussions within Singapore or Asia,¹⁹ leaving an important gap in understanding how cultural and systemic factors might influence these conversations. As the first study of its kind in the region, this research sought to investigate the experiences and preferences of heart failure patients in Singapore regarding medication cost discussions, with the long-term goal of developing effective strategies to improve these discussions between patients and clinicians. Importantly, promoting these discussions is essential to advancing evidence-based medicine,²⁶ which integrates patient preferences to enhance clinical decision-making. Additionally, transparent discussions about medication costs also uphold medical ethics by promoting patient autonomy and ensuring beneficence by reducing harm related to financial toxicity.²⁷ As part of its exploratory aim, this study also explored whether consideration of cost influenced patients' decisions to better understand the relevance of cost discussions.

Materials and Methods

Study Setting and Participants

The study recruited patients from the heart failure outpatient clinic at a public hospital from August to September 2022. To be eligible for the study, patients had to be 21 years or older, had a previous diagnosis of heart failure, and be able to comprehend and communicate in English. There were no exclusion criteria for the study. Recruited patients also participated in a separate study to pilot test the usability of a prototype decision aid which is not reported here.²⁸ This study was approved by the domain-specific review board from the National Healthcare Group Singapore: 2022/00281 and was in accordance with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Data Collection

An exploratory qualitative survey was conducted face-to-face at the heart failure outpatient clinic via convenience sampling. This qualitative survey helped identify initial themes or issues which could then be explored further through interviews or focus groups. Patients were approached by the research team on their clinic date. Eligibility criterion was checked and prior to study commencement, all participants provided informed consent, which included agreement for the publication of anonymized responses and direct quotes. A pre-arranged questionnaire on Qualtrics (Provo, Utah, USA) was administered to participants ([Supplementary Material 1](#)). Participants were tasked to answer the questionnaire on their own and the research staff only intervened when they had queries. All responses were inputted into an electronic tablet by the participants themselves. The survey questionnaire consisted of open-ended questions,^{29,30} which aimed to explore patients' experiences and preferences regarding medication cost discussions. Participants also read a prototype decision aid ([Supplementary Material 2](#)) that contained information of ARNI (Medication A) and ACEI (Medication B) to answer two preference questions with and without cost consideration. The questionnaire was pretested by two external volunteers who were not involved in the study to ensure comprehensibility. There were no repeat surveys for this study. Collected data were anonymized and number coded prior to analysis. Measures were implemented to ensure that the links between participant identifiers and corresponding codes were stored separately from the research data.

Sample Size

The sample size for this study was determined based on information saturation from participants' responses to the open-ended questions. While studies for qualitative research have suggested a minimum sample size of 12 participants for information saturation to be reached,³¹ a decision was made to recruit a minimum of 48 participants in this study. The reason was that this survey was conducted alongside the usability testing of a prototype decision aid, which was already recruiting 48 patients.²⁸ However, if information saturation was not achieved with 48 patients, recruitment would continue beyond this number. Additionally, if the sample was found to be biased towards a particular population, more patients would be recruited to ensure a more diverse representation.

Data Analysis

The primary analysis involved a qualitative examination of responses to the open-ended questions, which was conducted using conventional content analysis.³² This approach allowed codes to emerge from the data without imposing any pre-existing perspectives. The analysts began by reading all of the data to get an overall sense of the patients' responses, then words that captured key thoughts were highlighted and formed the basis of codes. In the process, recurring codes were consolidated and sorted into meaningful categories with descriptive labels. Some categories were further broken down into subcategories to provide more specific descriptions of the codes. The coding process was manually completed by two independent analysts, who developed their own codebooks. Both analysts then compared their findings, shared their perspectives, and discussed any discrepancies in the codes they had generated. Ultimately, the two codebooks were merged to generate a set of common categories and subcategories that were identified in the responses. CONSolidated criteria for REporting Qualitative research (COREQ) checklist guided the reporting of the content analysis³³ ([Supplementary Material 3](#)).

Quantitative data from multiple-choice questions were summarized by descriptive statistics (ie median, interquartile range, percentages, and absolute frequency) using STATA version 14.0 (Texas, USA).

Results

A total of 59 patients were approached to participate in the study, of whom 48 agreed, yielding a response rate of 81.3%. Eleven patients declined to participate due to lack of interest. Five patients, who were not part of the initial 59 approached, were excluded because they could not speak or understand English. The survey took an average time of 10 minutes.

Patient's characteristics are shown in [Table 1](#). Majority of patients were of middle age (Median: 63.5 years of age) and of Chinese ethnicity (72.9%). There was an even spread of patients between different sexes and educational levels. Twenty-seven patients (56.3%) reported having more than sufficient money to buy things that they wanted after paying their medical bills,

Table 1 Characteristics of Patients

Characteristics of patients (n=48)	No (%) / Median (IQR)
Age (Year)	63.5 (56.8–75)
Sex	
Male	21 (43.8)
Female	27 (56.2)
Ethnicity	
Chinese	35 (72.9)
Malay	8 (16.7)
Indian	4 (8.3)
Bengalis	1 (2.1)

(Continued)

Table 1 (Continued).

Characteristics of patients (n=48)	No (%) / Median (IQR)
Education level	
No education	9 (18.8)
Primary school	9 (18.8)
Secondary school	19 (39.6)
A' level/ Polytechnic/Diploma or equivalent	6 (12.5)
University	5 (10.4)
Private Medication Insurance	
Yes	9 (18.8)
No	37 (77.1)
I do not know	2 (4.2)
Household income per month	
≤ S\$2000 per month	25 (52.1)
S\$2000 – 2800 per month	9 (18.8)
> S\$2800 per month	14 (29.2)
Time of diagnosis	
0 to 12 months ago	29 (60.4)
More than 12 months ago	19 (39.6)
Frequency of hospitalization in the past year	
Not hospitalized	23 (47.9)
1 to 2 times a year	22 (45.8)
More than 2 times a year	5 (10.4)

Abbreviation: IQR, Interquartile range.

thirteen patients (27.1%) had to cut back on their spending and 8 patients (16.7%) had difficulty paying their medical bills. Nine patients (18.8%) were on private insurance that covered medication bills and 24 patients (50.0%) were on government healthcare packages (ie Pioneer, Merdeka generation) that provided them with additional medical bill subsidies.

Patient Preference of Cost Information and Discussions

When asked whether patients wanted to have medication cost discussions with their clinicians, forty-five patients (93.8%) reported yes. However, forty-four patients (91.7%) indicated “rarely” or “never” engaged in a medication cost discussion with their clinicians over the past year. Similarly, forty-three patients (89.6%) wanted to know the cost of medications before they were prescribed by the clinicians but only 5 patients (10.4%) “always”, “often” or “sometimes” knew their medication costs before they were prescribed in the past year.

Reasons to Have Cost Discussions With Clinicians

Forty-five patients highlighted five key reasons for wanting to discuss medication costs with clinicians (Table 2). The most frequently cited reason was affordability, as patients were concerned about their ability to pay for medications long term. They wanted clinicians to be aware of their financial situation so that the final medication cost would be acceptable

Table 2 Reasons to Have Cost Discussions With Clinicians

Reasons to have cost discussions with clinicians			
	Category	Subcategory	Representative response
1	Affordability	Ability to pay	"It is still about whether I can afford the medicine in the long run. If the medicine is way too expensive and nobody tells me, then I will have problem paying and in the end I cannot continue to eat the medicine". (#01, Male, Chinese)
2		Disclose financial situation	"I will like to let the doctors know my acceptable budget (for my medication). If there is no discussion (of my budget), then I do not think the doctors will know my financial situation right? It is not like the doctor actually look at our CPF (Central Provident Fund: a mandatory personal saving fund in Singapore which consists of Medisave that can be used for medication payment) and salary before deciding our medication, so if there is no discussion, I do not think they will know our issue". (#34, Female, Chinese)
3		Platform to raise cost concerns	"Currently, I do not see any other ways provided by the hospital to raise medication cost issue to the providers (doctors). The only way is to tell the doctors directly in the clinic. I mean if the clinic has staff who can discuss with us these cost information before seeing the doctor, I will be okay with that as well but I do not see that happening for now". (#35, Female, Chinese)
4		Cost induced stress	"I want to tell the doctors my current financial situation is not that ideal to be taking so many different medicines which adds up to a huge medical bill. I know all the doctors care about my health but I really think the stress from the different medical payment is worsening my health". (#39, Male, Chinese)
5	Taking ownership of health	Establish interpersonal communication	"I think it is important that the doctors and I discuss together about which medication is best for me... the doctor can listen to what I need and I can also listen to his expertise. In the process, I am sure that (medication) cost, alongside all other important factors will be discussed together". (#30, Male, Chinese)
6		Take part in decision making	"I think when the doctor suggests any medicine to me, they also need to let me know what I am going to take including all the pros and cons (of the medication)... If not, I feel like the decision made is just one way and I do not feel like I got much of a say in my own health even though the government keep emphasising we need to take care of our own health". (#17, Female, Chinese)
7	Making an informed decision	Ascertain medication based on value for money	"...I was given Janumet (Branded diabetic combination medications: sitagliptin and metformin) that is quite costly and I have been taking that for so many years. Recently... I went to the polyclinic and was prescribed with generic metformin (non-branded diabetic medication) for my diabetes. My diabetes was very well controlled even with the generic metformin that cost a fraction of Janumet. So now I ask myself, why was there the need for me to take Janumet in the first place, if the doctor told me the cost of Janumet and generic metformin and allowed me to make a choice, I will probably choose generic metformin in the first place". (#029, Male, Chinese)
8		Cost is an important factor in decision making	<p>"Cost of the medicine is (a) major factor in my decision on which medicine to take so it is important to discuss cost of medicine with the doctor if I have the choice" (#03, Male, Malay)</p> <p>"It is important to know how much the medicine cost before I choose which medicine to take. This will affect whether the decision is a good decision or not. There was this once that this India doctor told me the wrong cost (for a medication), (the medication) turns out to be 4 dollars per tablet but doctor said 1 dollar every day. I was really frustrated when I paid for the medication because the cost is 4 times more than I anticipated. I made a decision to choose this medicine if it costs 1 dollar but I did not agree to pay for this medicine if it cost 4 dollars". (#33, Male, Indian)</p>

(Continued)

Table 2 (Continued).

Reasons to have cost discussions with clinicians			
	Category	Subcategory	Representative response
9	Minimise inconvenience	Convenience in accessing medication cost information	"I think this is one of the ways I can know the cost of the medication. The other way is probably to show us the (medication) cost beforehand like on the internet but then we still have to know what the medicine name is, which is often not easy to remember, and search by ourselves. That is why I would rather the doctor tell us the cost of the medicine during the clinic so that it is convenient for us patients". (#28, Female, Malay)
10		Resolve concerns ahead of time	"I think it is better if I can discuss the cost with someone before the medicine is decided. So in this case, it is likely the doctor because they prescribe the medicine to me. If I were to discuss with the pharmacist at the pharmacy, and then I realise the medicine is too expensive for me. I will need to go back to the clinic, tell the doctor why I had a change of heart and ask him to change my medicine which is very inconvenient for me especially in Singapore". (#31, Male, Chinese)
11	Tailored information	–	"Knowing the cost of medication is not enough. Because sometimes we need to take 2 times a day or 3 times a day so you need to think about the tablet cost and the frequency of use. If a tablet cost 1 dollar, that does not mean you only pay 1 dollar a day, you may need to pay 3 dollars a day because you need to take 3 times a day. You can only get these information (tablet cost and frequency of use) if you talk to the doctor; if you check the price of medicine online or from your friends, you still cannot get (calculate) overall cost per day". (#33, Male, Indian)

to them. Patients also wanted to take ownership of their health by having open communication with their clinicians. Thirty-three patients (68.8%) preferred to make their own decision after considering clinicians' opinion or a joint decision with clinicians. Making informed decisions was another priority, with patients seeking to compare medications based on cost and other factors to ensure value for money. Discussing costs directly with clinicians also minimized inconvenience, as patients found it more convenient than searching for cost information elsewhere. It also helped them manage expectations early, avoiding having to return to the clinic to ask for cheaper alternatives. Lastly, patients appreciated the tailored information clinicians provided, since they determined the medication dosage and frequency of use, which directly influenced the total medication expenses.

Reasons for Not Having Cost Discussions With Clinicians

Forty-seven patients cited three reasons for not engaging in medication cost discussions with clinicians (Table 3), with one patient not answering as he had always engaged in cost discussion. The first was patient-related barriers, with some patients feeling responsible for not initiating the discussions. They believed they should be able to afford any new medications based on past experiences, and some were not aware that cost conversation was acceptable, fearing it might be disrespectful to the clinician. Additionally, many lacked knowledge about the exact cost, which hindered their willingness to initiate the discussion. The second reason involved clinician-related barriers, as more than half of the patients felt clinicians did not proactively address medication costs. Contributing factors included clinicians' uncertainty about the exact medication prices, assumptions about patients' financial capabilities, and perception of cost matters as not part of their responsibilities. The third reason was insufficient clinic time, as there was usually only time for one or two questions during the clinic. Both patients and clinicians have to prioritize other important topics to discuss, resulting in cost-related issues being frequently overlooked.

Table 3 Reasons for Not Having Cost Discussions With Clinicians in the Past

Reasons for not having cost discussions with clinicians in the past			
	Category	Subcategory	Representative Response
1	Not initiated by patient	Patient unaware of cost	"I can't always discuss the cost if I don't know the cost of the medicines". (#07, Male, Malay)
2		Capable of covering medication cost	"The cost of my current medicines are all covered (by) Medisave (Medisave: a mandatory personal saving fund in Singapore that can be used for medication payment) and acceptable to me. So I never had the need to discuss cost of medicine with the doctor" (#09, Male, Malay)
3		Appropriateness of cost discussions with clinician	"I didn't really know that I could actually discuss cost of medication with my clinician, I thought they will be aware of what is important to discuss and what is not" (#12, Female, Indian) "I also never knew I could actually discuss the cost with them, I always thought money problem just talk to the nurse, social worker or the payment officers at the counter". (#20, Male, Indian)
4	Not initiated by clinician	Clinician unaware of medication cost	"The doctors themselves don't really know the cost. I once asked the doctor to tell me how much a medicine cost. She told me to ask the pharmacy later because she doesn't know the exact cost". (#23, Female, Chinese)
5		Patient capable of covering medication cost	"I have never raised up any questions so far so I think the doctor thinks I can pay for all the medicines for now so they haven't say anything about the medicine cost". (#19, Female, Indian) "Maybe to them, cost of these medications in their eyes are quite affordable and not worth spending time to discuss" (#27, Female, Malay)
6		Not part of clinician job scope	"...the priority of healthcare is to give patient the best treatment for their health. I don't think the doctors consider about cost so much since the important things is to help the patients instead of discussing cost". (#26, Malay, Chinese) "...no other doctors has discussed cost with me, maybe they don't think it is their job to discuss about finances". (#39, Male, Chinese)
7		Profit driven intention	"I think sometimes some doctors especially private doctors want to earn more money so they purposely don't want to tell us the cost of the medications so that they can ask us to buy the branded medicine". (#29, Male, Chinese)
8	Limited time during appointment	—	"Usually, the conversation do not occur because the doctors simply do not have the time. I mean I can probably ask 1 or 2 questions max(imum) before my clinic time is up. So I have to think about what are the most important questions to ask. Most of the time, cost is not that question so that is why it is not discussed so often". (#45, Male, Chinese)

Preference of Medication With and Without Cost Consideration

Disregarding cost, twenty-eight patients (58.3%) favoured ARNI, while 15 patients (31.3%) favoured ACEI (Figure 1). However, when cost was factored in, the preference shifted, with only 12 patients (25.0%) still favouring ARNI, while the number of patients preferring ACEI increased to 34 (70.8%) (Figure 2). Sixteen patients who preferred ARNI and 3 patients who had no preference previously switched to ACEI after cost had to be taken into account.

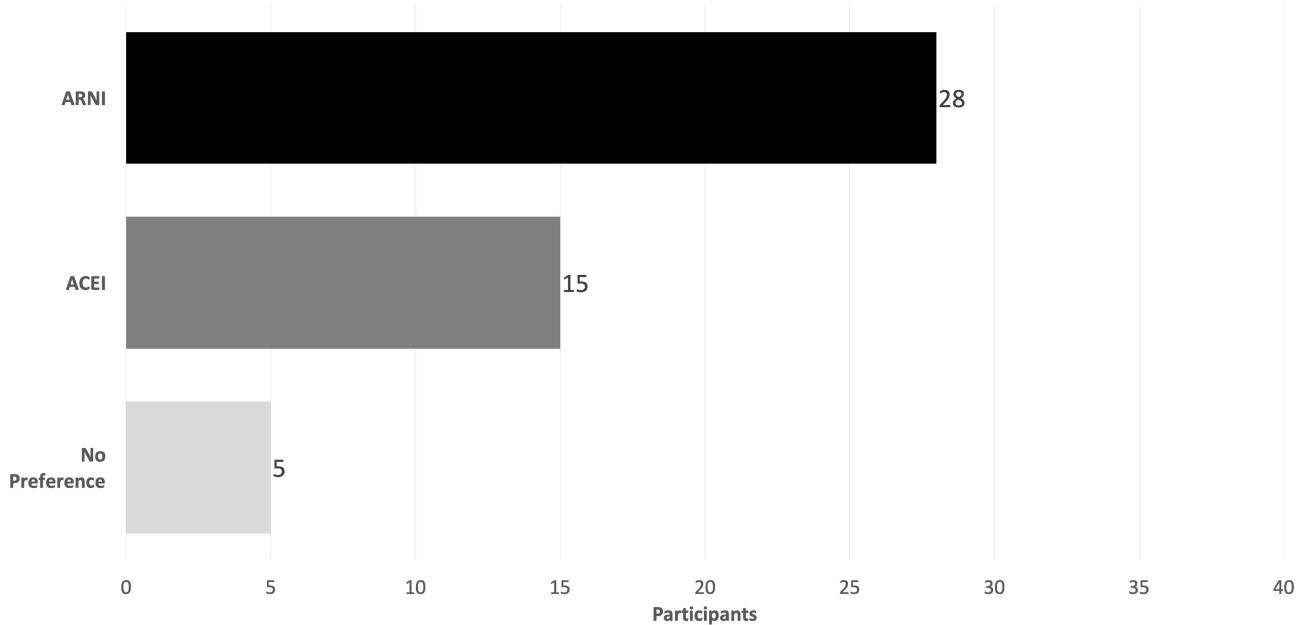


Figure 1 Preference of medication based on information in decision aid when cost is not considered. N = 48. Number beside bar indicates patients who preferred that medication.
Abbreviations: ARNI, angiotensin receptor neprilysin inhibitor; ACEI, angiotensin-converting enzyme inhibitor.

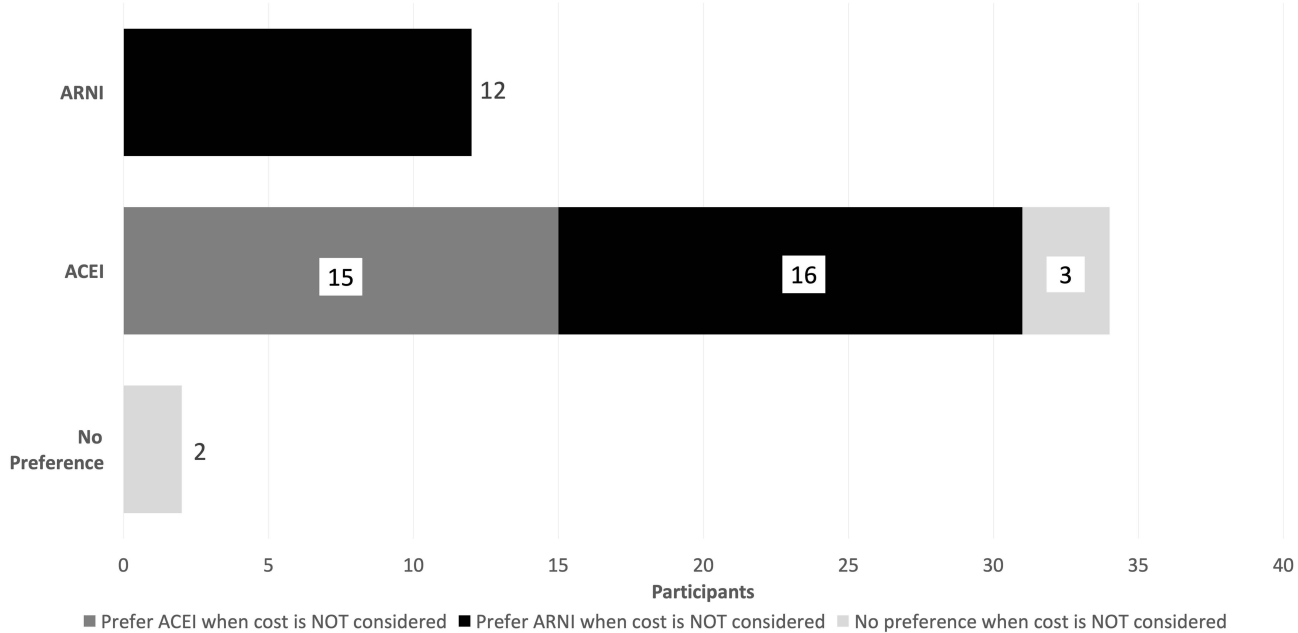


Figure 2 Preference of medication based on information in decision aid when cost is considered. N = 48. Number beside and inside bar indicates patients who preferred medication labelled on the left.
Abbreviations: ARNI, angiotensin receptor neprilysin inhibitor; ACEI, angiotensin-converting enzyme inhibitor.

Discussion

To our knowledge, this is the first study in Asia to understand cost-related communication from the patient’s perspective. The fact that the majority of heart failure patients in this study (91.7%) did not have regular medication cost discussions in the past year suggests a significant gap between patient preference and actual practice. This finding was consistent with

reported studies that had explored cost discussions in patients with other diseases. For example, 52% of cancer patients in the United States and 68% of rheumatoid arthritis patients in Canada desired to have cost discussions but only 19% and 22% had talked to clinicians about cost respectively.^{23,34} Some patients might be struggling with the cost of medications, in this case, 16.7% of recruited patients had trouble paying their medical bills, but clinicians might not be aware of their situation or did not consider patients' financial constraint as part of their medical responsibility. It was disheartening to hear that a few participants reported experiencing mental stress from their medical bills through this survey. It is important to address this gap by making clinicians aware of the issue and encouraging them to have more discussions with their patients about medication costs. By doing so, we can reduce any unnecessary psychological stress which can worsen patients' health.

A unique finding was made, suggesting that patients' preference to have medication cost discussions might not necessarily stem from immediate financial burden. This study reported that 56.3% of participants had sufficient money to spend on things that they wanted and thus medication costs should not be an existing concern to them. However, their readiness to accept cost associated with new heart failure medication remained constrained. This was evident from the high proportion (93.8%) of Singapore heart failure patients who preferred to have a discussion on medication costs before medications were prescribed by their clinicians. The reason was attributed to the rising cost of newer medications being integrated into the standard heart failure regimen, leading patients to question their long-term financial capacity to afford these medications. This behaviour was particularly noteworthy as medications in Singapore public hospitals are heavily subsidized of up to 50–75% by the government,^{35,36} yet, patients were still concerned about the rising cost of medication, suggesting a potential lack of confidence in the government's ability to regulate healthcare expenses or in their own financial capacity to sustain long-term medication payments. However, these interpretations are speculative, and further studies are required to confirm these hypotheses. The finding that affordability was the most common reason cited by patients for wanting cost discussions with their clinicians highlights the importance of addressing current and future financial concerns, regardless of patients' immediate financial capacity or medication bill. Essentially, patients want to feel assured that their lives will not be jeopardized by the cost of medications. A study on the United States heart failure patients also reported similar results where participants with both high and low levels of reported financial burden were open to having cost discussions with clinicians.²⁰ However, this could be easily apprehended as their out-of-pocket expenses were higher than that of patients in Singapore.

Patients gave various reasons to explain why cost discussions were uncommon. Regardless of who should initiate the cost discussion, the lack of precise medication cost information was a prominent reason. This lack of cost information is a significant issue in healthcare communication, as it impedes meaningful discussion between patients and clinicians.^{25,37,38} When neither party is aware of the medication costs, it may lead to uninformed decisions that result in unwanted medical bills or financial burden. Clinicians may also miss the opportunity to recommend lower cost alternatives for patients with financial difficulties. In Singapore, the lack of accurate cost information is due to varying out-of-pocket costs among patients. Although each medication's purchasing cost is available to clinicians, the final payment cost can be challenging to calculate due to the different subsidy bands available based on the medication category and each patient's financial status.^{36,39} Clinicians may be unwilling to inform patients of the purchasing cost due to its significant differences from the final cost. While pharmacists can provide out-of-pocket cost calculations,⁴⁰ they will often require additional time and effort, making detailed medication costs unavailable at the time of clinic encounter. From the study result, we understood that having accurate cost information before clinical encounters would be critical for inducing cost discussions in the clinic. In contrast to the United States healthcare system where the final payment cost might be often difficult to compute due to a lack of transparency among stakeholders,⁴¹ Singapore healthcare faces the challenge of the individualised calculation required to cater specific cost information to each patient. To address this issue, future research can explore the use of new technological features to streamline the process.

Additionally, patients had expressed concerns that cost discussions might be seen as disrespectful to clinicians. This dynamic reflected a paternalistic doctor–patient relationship, where clinicians were viewed as authoritative decision-makers, and patients were expected to comply with their medical recommendations.⁴² Such hierarchical structure which has been seen in many Asian healthcare systems, including those in China,⁴³ India,⁴⁴ and Southeast Asia,⁴⁵ often discourages patients from raising concerns, particularly about medication costs. Tackling this barrier requires a cultural

shift toward patient-centered care, where clinicians acknowledge patients' preferences. Additionally, system-level changes will be necessary to support open and collaborative communication between patients and clinicians.

Lastly, this study explored whether cost factors into medication decisions. Out of the 48 participants, 19 adjusted their medication preference upon considering cost, all opting for the more affordable ACEI. Although this was an expected outcome with existing research showing a preference for lower cost treatments across various medical conditions,^{46–48} the significant number of patients who altered their medication preference underscores the importance of cost discussions between patients and clinicians. Nonetheless, fifteen patients still preferred ARNI despite cost considerations, suggesting ARNI cost might not have been a major deterrent for them. It will be useful to investigate patients' maximum willingness to pay to better identify those who would benefit from cost discussions.

There are several limitations to this study. Firstly, patients' preferences and experiences were collected via open-ended questions rather than in-depth interviews. Open-ended responses may not provide the same level of depth and richness of data as in-depth interviews, which allow for more detailed probing and follow-up questions that can result in more detailed responses. However, open-ended questions were chosen for this study to reduce interviewer bias and interference, as interviewer's probing could shape the responses of patients. In this study, participants were tasked to express their opinions in their own words, rather than being constrained by a pre-determined set of prompts. Also, to minimize cognitive burden, the research team did not want to include an in-depth interview on top of a long survey that was already planned. Secondly, the study relied on self-reported data which might be subjected to recall bias. Patients might have forgotten some instances where they had a cost discussion and might have difficulty recalling the details of these discussions. This was especially true in this study since approximately half of the recruited patients were elderly. Recall bias can lead to an underestimation or overestimation of the frequency of cost discussions. The study tried to reduce the bias by limiting the recall duration period to the past 1 year. However, future studies may consider using more objective measures such as recording the clinic encounter to assess the frequency and quality of cost discussions between patients and clinicians. Lastly, the study focused on patients' perspectives and did not include the perspectives of healthcare providers. It would be valuable to understand the perspectives of healthcare providers to gain a more complete picture of the barriers and facilitators to discussing medication costs with patients.

Conclusion

Outpatient heart failure patients in Singapore public hospital want to discuss medication costs with their clinicians before their medications are prescribed, as their decisions factor in cost. Reasons for wanting such discussions include affordability, taking ownership of their health, making informed decisions, minimizing inconvenience, and obtaining tailored cost information. However, only a small percentage reported actually having such discussions with their clinicians over the past year. Patients reported a lack of initiative and limited cost awareness from both clinicians and patients, and time constraints as reasons why these conversations did not happen often. To address these gaps, patients and clinicians need to work together to overcome the barriers that prevent cost discussions from occurring while healthcare systems should foster an environment where cost discussions are normalized and encouraged. This is to ensure that patients make an informed medication decision while minimizing financial burden.

Data Sharing Statement

The de-identified data generated and analysed in the study are available from the corresponding author on reasonable request.

Generative Artificial Intelligence or AI-Assisted Technologies

No generative artificial intelligence and AI-assisted technologies were used in the production of the submitted article.

Ethics Approval and Informed Consent

This study was approved by the domain-specific review board from the National Healthcare Group Singapore under study number: 2022/00281. Prior to study commencement, all participants provided informed consent, which included agreement for the publication of anonymized responses and direct quotes.

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Author Contributions

All authors made significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare that they have no competing interests.

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