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ABSTRACT

Objectives

This study aims to explore and to describe a model of barriers to smoking cessation from primary care perspective.

Design We conducted individual in-depth interviews in a semi−structured format, which was audiotaped, then verbatim transcribed and translated when necessary. Using Straussian grounded theory method, data was first independently coded and then collectively discussed for emergent themes.

Participants and Setting We recruited 57 participants by purposive sampling from the respondents of our previous smoking related study. Current smokers who had at least one failed quit attempts were included in the study.

Results A model of five themes emerged. Participants were unable to resist temptation cues in their personal life and lifestyle. Nicotine addiction was a problem for some. Misconception of ability to quit smoking was just like as a matter of mind-control. Participants also had serious wrong beliefs that smoking could be therapeutic and stop smoking could instead cause serious health complications. Following cultural norms of accepting cigarettes offered by friends was perceived as a token of friendship was a problem. Finally, smoking cessation services were not user friendly.

Conclusions Specific beliefs and practices prevented smokers from quitting. Clinicians need to work on the identified factors to help patients overcome barriers to smoking cessation.

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ARTICLE SUMMARY

Strengths and limitations of this study

- As a grounded theory study from the perspective of primary care, this paper will contribute to the currently limited literature generated on the basis of patients' experiences in their quit attempts.
- A diversity of participants from different races and from both high and low nicotine dependence were recruited.
- The use of in-depth qualitative methods allowed detailed account of smokers' experience in smoking cessation.
- No focus group interview was done in this study and hence the opportunity to observe the interaction among the participants was lost.

INTRODUCTION

Cigarette smoking harms almost every organ of the body resulting in premature death in half of the smokers[1] and yet there are over one billion smokers in the world.[2] Quit smoking can save lives. Quit interest is high as evident by nearly 7 out of every 10 (68%[3]) smokers want to quit completely but most quit attempts are unsuccessful(7.4%[3] success rate) despite many theories or treatment methods. The estimated number of attempts before quitting successfully ranged from 6.1 to 142.[4] The abstinent rate at 6 months is only 3%-5% in those self-quit[5] and 19%-33% in those opt for pharmacotherapy.[6] We must therefore look hard from all perspectives to understand reasons contributing to failures in smoking cessation.

Smokers from socioeconomically deprived background face more challenges and so need more effort to prevent relapse in smoking cessation.[7] Predictors of quit smoking behavior in the East for example in Malaysia and Thailand are not the same as those in the West.[8, 9] This was thought to be due to different cultural background, socioeconomic and environmental conditions, social acceptability of smoking as well as disparities in tobacco control policies.[8] 80% of the smokers in the world live in the developing countries.[2] Hence, studies related to quit smoking behaviours in the relevant cultural and socioeconomic settings of developing countries are in need.

Malaysia is a developing country with a complex society in many aspects –ethnically, linguistically, culturally and religiously. In addition to the three major races of Malays, Chinese and Indians, there are also a myriad of indigenous ethnic groups. The different races here are encouraged to keep their own ethnic names and languages and to practise their respective religions but also to accept culture of other ethnic groups. Such diversity can make smoking cessation a more complicated task to handle for the medical practitioners.

Approximately 22.8% of Malaysians smoke.[10] The smoking rate for adult males is 43%[10] and for adult females is very low at 1.4%.[10] High prevalence of current smokers are link to male, Malay, rural population, government servant and low educational background.[10] Ethnic wise, the prevalence of smokers was the highest among the Malays, followed by Indians then Chinese.[10] There is no statistics available for the indigenous groups. Over the past 12months, 52.3% of its current smokers made an

attempt to quit smoking.[10] Overall, less than 10% of current smokers visited a healthcare provider with 75.4% of them had been advised to quit smoking.[10]

This study aims to explore barriers to quitting smoking from the perspective of primary care .We chose a qualitative study because "a qualitative study is able to capture expressive information about beliefs, values, feelings, and motivations that underlie behaviours"[11] of participants. The process of comparing and exploring smokers' answers to our open questions can potentially lead us to 'discover' new patterns of information regarding barriers to quitting smoking in this unique society. Primary care providers with "whole person medical practice"[12] have the most opportunities to help smokers to quit smoking. Nevertheless, grounded theory study from the perspectives of primary care is lacking. Identifying barriers to quitting is an important step in both 5As and 5Rs approach[13] of brief intervention. Our data will help primary care practitioners in smoking cessation counseling.

METHODS

Sampling and setting

This is a qualitative study registered and approved by Medical Research Ethics Committee of the Ministry of Health Malaysia (Ethics approval NMRR-16-2113-33134). Participants were recruited by purposive sampling. From our previous smoking related study in 2016-2017, we have a ready list of 191 participants reported with previous failed quit attempts. Their demographic profile, smoking history and Fagestrom test for nicotine dependence level were also available. We contacted participants who were eligible by telephone calls to explain the purpose and the nature of the study. Participants were given the option to meet with investigators at Penang Medical College or their preferred location including their homes for an interview. Sample size was determined on the basis of theoretical saturation. Subjects from both high (Fagerstrom score 6-10)[14] and low nicotine dependence (Fagestrom score 1-5)[14] were included. Twelve invited smokers refused to participate in this study. Eight of them did not give any reason and the other four stated that they were too busy. We did not manage to organize any focus group discussion (FGD) as intended because our participants felt that they were too shy to speak in a group.

Data collection

Formal informed written consent was obtained from all participants. Fifty-seven one to one individual in-depth interviews (IDI) were conducted. IDI were done by six interviewers in the team. Two of them were family physicians and lecturers (one male (KCT) and one female (KYC)) of Penang Medical College; three were fresh medical graduates (one male (KWL) and two females (CCT, XLC)) awaiting internship posting and one was a medical student (female (STO) from Ireland). KYC provided training in conducting the interviews for the rest of the team. Two pilot interviews were done. None of the interviewers were treating doctors or friends of the participants. Techniques used by interviewers include one to one open−ended questions, semi−structured format, conversational and intense probing for deeper meaning and understanding of the responses. Interviewers followed an interview guide (Table 1) which was consistent with the concept of being 'open' and "discovery" aiming to construct a particular theory. The initial question asked was open ended to facilitate participants to describe, to reflect and to express values in their own words. Subsequent questions were navigated by both participants' response and the pre-determined questions in the guide. Questions were phrased in a way to get very detailed answers from participants. Adherence to the guide was not necessary.

The interviews were conducted in participants' preferred language which included English, Malay, Mandarin and Hokkien dialect. The duration of interviews took about 20-60 minutes. The interviews were audio-recorded and transcribed verbatim. Interviews conducted in non- English were translated.

The interviewers met up with the participants once more to verify the accuracy and to correct any errors in the transcripts within 2 weeks of the initial interviews. At the same time, participants were encouraged to provide additional information if they wish.

Table 1: Interview guide

Opening question:
Please share with us your experience in quitting smoking in the past.
Prompts:
How many times have you tried/did you try (before you succeeded)? When was it?

How long did you stop for?

How did you stop smoking?

What makes you resume smoking after stopping?

What makes the process difficult?

What is your reflection on this experience? What do you learn from this experience?

Would you like to say something we haven't talked about and that is important for you?

Data analysis

Data was anonymized and presented in the form of words. Thematic analysis driven by grounded theory methodology was employed. The analysis started with line-by-line open coding by all 6 researchers independently. The researchers then met for axial coding and clustering to develop master headings and subsequently higher categories. The process of analysis was facilitated by the techniques of constant comparison, memoing, continual checking and clustering of emerging themes. Finally, a theoretical model was formulated by linking the fragmented codes.[15] QDA Miner Lite software[16] was used to assist with code frequency analysis, coding retrieval and Boolean text search.

Patient and public involvement

This study was inspired by the results of a smoking related study of ours. In that study, "Assessing Airflow limitation Among Smokers In a Primary Care Setting" (https://doi.org/10.21315/mjms2018.25.3.8.), we found high prevalence of airflow limitation among smokers and from it implied urgency with helping smokers to quit smoking. We thought that we will break new ground with a grounded theory study. The patients and public were not involved in the design nor the recruitment and conduct of the study.

RESULTS

Fifty- seven participants were interviewed. Participant demography was presented in table 2.

Table 2: Study Sample characteristics (N =57)	
Demographic	
Age, years, mean (SD)	58 (10.8)
Mode	50
Range	40-82
Gender N (%)	
Male	56 (98%)
Female	1 (2%)
Ethnicity N (%)	
Malay	15(29.4%)
Chinese	32 (62.7%)
Indian	4(7.8%)
Education level N (%)	
Primary education	21 (36.8%)
Lower secondary	19 (33.3%)
Upper secondary	14 (24.6%)
Tertiary	3 (5.3%)
Fagestrom score N (%)	
High addiction (8-10)	8(14.0%)
Moderate (5-7)	14 (24.6%)
Low to moderate addiction(3-4)	20(35.1%)
Low addiction(0-2)	15 (26.3%)

A descriptive model consisting of five themes emerged as main reasons for the failed quit attempts. (Figure 1)

Insert figure 1

Theme 1: Personal and Lifestyle Factors

Majority of participants were incapable of resisting temptation cues during their quit attempts. Temptation cue was described as an environment where the presence of smokers, when cigarette was exposed or easily accessed. Influence of friends who smoked in social activities or work places attributed to the relapse into smoking.

"I feelt it was because I mingled with friends who are all smokers. So, if I am the only person who have the plan to stop smoking and mix with friends who are still smoking, that is why… because the cigarette is exposed. I don't have any choice" (Participant 17))

In the meantime, it was observed that relapse in smoking cessation was often related to impaired capacity for self-control and lack of intrinsic motivation.

"Control... No power of control. Self-control weak, rather weak." (Participant 13)

However, some participants showed that the decision to resume smoking was rather impulsive.

"Yes, it is a mistake. Because I was already not looking for (cigarette) that time, I already was not craving, but just "try, try". After then, it was like learning again, learning again the taste slowly, it was like normal…… tried to discipline ah… Eer.. after one week, it was very hard, definitely very hard, want to find cigarette, than must resist, resist the temptation until 2 weeks then it went. Week 3, I feel that even the smells smoke form other smokers make me not comfortable, not because I was craving for cigarette but it was because it was like "stinky". After then, gradually one month, two months, it is ok lah. It is stable. 3rd month and 4th month like that, definitely I was not looking (for cigarette). After then, I started to have the urge for cigarette, so I want to try again, so it was my fault. It was like "play… play" smoke, smoke again, not because of addiction oh" (Participant 17)

In addition, withdrawal of extrinsic factors that motivated our participants to stop smoking was the reason for them to resume smoking. A few circumstances had been described. For example, after sickness, out of prison, out of smoking free zone, no longer taking care for a sick mother or being nagged.

"I was admitted to ICU for 5 times in IJN. So I "smoke back" after my bypass, I resumed smoking. (Participant 28)

Theme 2: Addiction

Cigarettes contain nicotine, which is highly addictive. It is the culprit in causing difficulties in smoking cessation among smokers. Participants reported withdrawal symptoms upon quitting.

"…Stopped 1-2 months, I felt more tired……If I didn't smoke, I was not able to open my bowel, I became constipated……If I smoked at night, I slept better."(Participant 26)

"I was feeling difficult, breathless at times. I also noticed that I had chest discomfort which was more when I work. I had no choice but to smoke again."(Participant 51)

Cigarette was perceived as a companion. Many smokers reported that they smoke out of habit or feeling bored or lonely.

"I smoke back... because … of addiction... feel like take cigarette. It is a habit, for example after meal, it is a habit to smoke cigarette... After breakfast, one sticks, after coffee... Drink, yes... and after lunch time..." (Participant 37)

"It's not because you're addicted or…like, err, withdrawal symptoms….. also not because of stress … Err, just like…past time. (chuckle)…… it's like a hobby la." (Participant 12)

Psychological dependence clearly highlighted the pleasure they experienced from smoking. There were also a handful of participants who described experiences which were strongly suggestive of psychological addiction to cigarette smoking, regardless if they realized it or not.

"*That actual problem is our mind, the brain ...because why, you know? When we are not smoking, the brain will tell you: 'There are other smokers there, could you ask him for one cigarette?" (Participant 37)*

"…… because for smoker you feel that something is missing. So, you tend to ask for a stick. Ask for a stick, you know. Then from then starts again. Two sticks….. "Participant 41)

Theme 3: Socio-cultural Norms

Some participants expressed that the offering of cigarettes from friends and relatives was the main reason they failed their quit attempts. It was a local culture for smokers to offer their friends and relatives cigarettes as a sign of goodwill and close relationship.

"My friends…. They offer and we don't refuse it. We take it as a token of friendship" (participant 43)

Moreover, our participants were persuaded by their close contacts to smoke even though they had initially expressed their quit smoking intention and had rejected the offer. The contacts gave them the impression that smoking a small amount of cigarettes would not affect their quit attempts. As a result, participants reverted to smoke cigarettes.

> *"I actually managed to quit – roughly 3 months. After that, I went for a course in Bangi. I went for a course in Bangi for a week. There, I had colleagues who smoke, they offered me. I said I didn't want because I've quitted. And they said, "Never mind, only one. Never mind." So he gave me, and I smoked. After that, after lunch, he offered me again. (Participant 9)*

Some participants expressed that it was easy to request a cigarette from the close contacts. The contacts did not attempt to advise or forbid them to smoke. Our participants felt the need to reciprocate their "kindness" by returning them cigarettes. This made our participants to buy and to keep cigarettes near them again.

For Muslim participants, the withdrawal of social and religious motivation post-fasting month increased the tendency to relapse.

> *"The month of puasa (fasting month), I was free for the 1 month. Don't want lah, I don't want to smoke in front of my family. Then, when if the time during iftar, that will waste a lot of time. So, I let myself relax for 1 month. I wanted to rest during fasting month. For my lungs to cleanse it……..."After fasting month, I started back but less (cigarette). Sometimes 3-4 sticks, 5-6 sticks" (Participant 23)*

Theme 4: Misconception

Smoking cessation is a complex and dynamic process in that most smokers make multiple stages among smoking, reduction, and abstinence.[17] However, our participants perceived quit smoking as a game of the mind.

> "……. *to quit smoking depends on will power. for me, this is a game of the mind. We set our mind,*

tomorrow, I don't want to smoke tomorrow, then I will not smoke tomorrow." (Participant 23)

"I smoke for "saja" (for fun) not because of addiction. But if it is due to emotional problems, up to here (point to his head) then there are a lot of problems not solved, and the feeling is up to here (point to head), this is another experience, then there will be just cigarette only. When the mind is not calm, nah….. finish one stick then another again and again."(Participant 17)

Being a multiracial, multicultural and multi-religious country, it was not surprising that there were many myths, skewed personal beliefs and misconceptions that are deeply rooted in the society of Malaysia. We observed a wide variety of myths and beliefs to varying frequencies amongst the participants.

Patients often trust their treating doctors and therefore take their doctors' words to heart. This would undoubtedly include tips, advice, beliefs and perceptions.

"I stopped abruptly, so I felt breathless. Then my family brought me to the hospital …….Then the doctor scolded me, "Did you want to die? You cannot stop (smoking) completely all of a sudden. If you want to stop, you need to come to the hospital and meet the MO (medical officer), the doctor, to get their advice. ..... At least you have to smoke one a day."(Participant 9)

There were a handful of participants who exaggerated or misinterpreted the effects of smoking cessation as harmful to health.

"*I stopped for a few months then I became frightened. My friends said once stopped, disease will come, also I saw my friend (who) died after stopping (smoking)." (Participant 11)*

"*There are side effects when stop smoking, after I stopped smoking, I was diagnosed as having high blood pressure and had a heart attack as well."(Participant 28)*

On the other hand, there was one participant who believed that second-hand smoke was more harmful.

"If I breathe in second hand smoke, it is more poisonous than if I smoke myself. (Participant 1)

It was interesting to also highlight the belief that smoking might in fact be therapeutic.

"*I had that disease (Idiopathic thrombocytopenic purpura) for a long period, I did not know. ..... I suffered from gum bleeding during brushing teeth, sometimes spontaneously. So I resumed smoking, once smoking… the gum bleed stops. .....smoking is good*" (Participant 33)

One participant commented that hand-rolled tobacco leaves were less hazardous than commercial cigarettes.

"People said rokok daun (tobacco leaves) is better compare to cigarette. So I cannot "tahan"(stand) without smoking…after discharged from hospital, my friend recommended "rokok daun"(tobacco leaves) to me. The smell is there…I tried it and I continue to smoke……..At least, this "rokok daun" is better. And I managed to stop the cigarettes. (Participant 49)

Interestingly, there were participants who developed defense mechanisms themselves to ward off the concept that smoking is dangerous/unacceptable. This was particularly true when the participants felt obliged to refrain from smoking in the presence of young children or other family members.

"*Sometimes I smoke alone in my own room. But I…I open the windows. My room has air-conditioner but I don't even turn it on……. "I turn on the fan to blow away all the smoke.*" (Participant 6)

Theme 5: Failed assisted smoking cessation

Some participants tried conventional methods (stop smoking clinic, nicotine replacement therapy) and alternative methods in their attempts to quit smoking. Most participants expressed that pharmacotherapy was ineffective. This perhaps resulted in a negative impression towards the effectiveness of stop smoking clinic. A range of medications were equally blamed by the participants.

"Smoking cessation clinic does not work. I tried chewing the gum, no use. Not working at all. Whatever medications they gave to stop smoking did not work. "(Participant 16)

"I already bought the type of cigarettes the "blocked", I am not sure if you have heard that before. The one with 3 cigarettes that is like when you smoke, it has no taste. May be you can quit, but I cannot. I brought from the pharmacy."(Participant 18)

The effectiveness of stop smoking clinic was also affected by non-pharmacological factors. These included the accessibility of the clinic and the language spoken. Language barrier was highlighted because there were multiple languages spoken in Malaysia.

"I have been to smoking cessation clinic two times. It is just too troublesome" (Participant 27)

"But I have gone there (stop smoking clinic). They were all Malay and my Malay is not very …. I did not really understand" (Participant 1)

Some participants also noted that they did not know the methods available to quit smoking even though they were willing to try. Participants implied that medical practitioners did not convey and educate them methods available to quit smoking.

"Doctors don't teach how to stop. And also nobody help you to stop. Do you think so? so you don't know the way to stop" (Participant 24)

DISCUSSION

Our participants which were represented by the 3 major races provided an in-depth account on their past quit attempts. In general, our subthemes were in congruent with that classified by the social determinants of health framework (SDHF) in model of the barriers to smoking cessation presented by Twyman et al[18] Nevertheless, our themes also highlighted a few important issues uniquely related to smoking cessation in this community, in particular themes like "misconception" and "social cultural norms".

Offering cigarettes one to another is perceived as a sign of friendship and this cigarette culture serves as an impediment to quit smoking in this society. In China, offering cigarettes is a sign of mutual respect during social events.[19,20] It is customary for a subordinate to light up for his boss.[20] On the contrary, such cigarettes culture is not seen in western countries.[20] Smokers in our community need to be taught methods in rejecting offering of cigarettes with reassurance that declining an offer of cigarette is not rude.

Our participants revealed a number of myths which were considered to be rather different from those listed in the literature.[21] For example, misinformation and misconceptions led them to believe that reduction in tobacco consumption is acceptable but if quit smoking entirely will cause disease. Another myth is that secondhand smoking is more harmful that active smoking and therefore they believe that in a smoking environment, active smoking is encouraged. In addition, false believe that smoking may be therapeutic or smoking with the fan on or the hand-rolled cigarettes is less hazardous is present in this

community. Some of these serious erroneous believe reflect low level of knowledge. Therefore, clinician should first assess and dispel the relevant false beliefs during counseling session.

To healthcare practitioners, tobacco smoking is regarded as an addiction disease. However, to patients, it is regarded as self-determined lifestyle choice.[22] Such discrepancy was observed in this study. It has long been established that nicotine addiction is the biggest cause of failure in smoking cessation. Nicotine can be as addictive as heroin, cocaine, or alcohol.[23,24] As a result, attempts to quit smoking are often unsuccessful because of withdrawal, stress, and weight gain.[25] Nevertheless, our participants did not perceive addiction as the major factor of failure, instead they expressed overwhelmingly that quitting smoking is a "game of mind" .Smokers blamed themselves as having poor determination in that stop smoking is a matter of how they control their mind. This finding is consistent with that of a recent quantitative study[26] which showed that most smokers believe willpower is necessary or sufficient for quitting. Such belief in mind control as the tool to quit smoking undermines the use of cessation assistance. The undermining of addiction of smoking renders smokers to "not believe" in the usefulness of pharmacotherapy.[27] The use of smoking cessation strategies in our setting has been low[28] and we believe such misconception is an important contributory factor. Participants were reluctant to receive professional help and preferred to "quit" by themselves. A national survey in 2016 in Malaysia revealed that nearly 80% of former smokers quit unaided, without any professional intervention.[28] More work is needed to get smokers to accept that cigarette smoking is highly addictive and nicotine addiction is very difficult to strike off. In addition, health care practitioners need to ensure sufficient patient knowledge to improve their confidence to acknowledge withdrawal symptoms and to focus more on the solution during cessation process.

Smokers find it easy to stop smoking during Ramadan due to the religion, cultural and environmental influences.[29] Although many Muslim smokers (97.7%[30]) in Malaysia smoke fewer number of cigarettes during Ramadan but only 15 % perceived Ramadan as a strong motivator to quit smoking[31] and therefore most relapse after Ramadan. It is also known that such good smoking behaviour changes during Ramadan is associated with those with higher income, high nicotine dependence and those who are not aware that smoking is 'haram'.[29] Such golden opportunity should be seized with implementation of religious-competent intervention to improve cessation rate.

Future studies should also include the indigenous populations of Malaysia. These groups may experience different barriers to cessation. Besides, future studies to measure the effectiveness of our suggestion in exploring and overcoming barriers to smoking cessation could be done.

CONCLUSION

A model on the barrier to smoking cessation (fig 1) was developed from the themes emerged from this study. This may serve a guide to perform step 4 (assist) in 5A[13] and step 4 in (Roadblock) 5R[13] strategies in brief intervention, which is basically exploring barriers to smoking cessation. Subsequently, appropriate action plan can be tailored accordingly.

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Authors Contribution

KYC conceived the idea. KYC and LGG contributed to the design of the study. KYC, KWL, CCT, XLC, KCT and STO conducted the individual focus interview, translated and transcribed independently. KYC, KWL, CCT, XLC, KYC, STO carried out thematic analysis as a group and drafted the original manuscript. KYC and LGG critically revised the manuscript. All authors provided approval of the final manuscript.

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Competing interests None declared.

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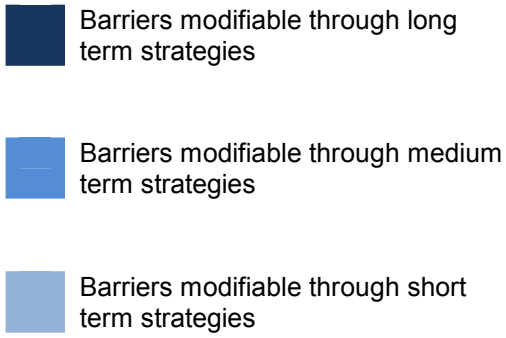
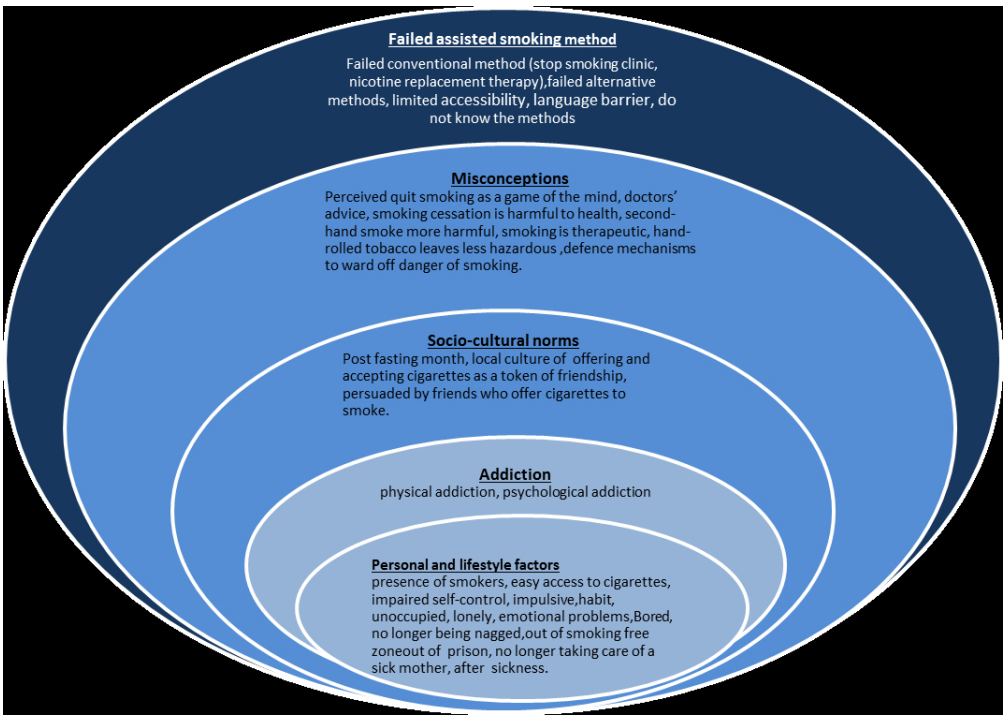
Figure legends

Figure 1: Model of barriers to smoking cessation in primary care





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COREQ (COnsolidated criteria for REporting Qualitative research) Checklist

A checklist of items that should be included in reports of qualitative research. You must report the page number in your manuscript where you consider each of the items listed in this checklist. If you have not included this information, either revise your manuscript accordingly before submitting or note N/A.

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 1: Research team and reflexivity			
Personal characteristics			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	6
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	6
Occupation	3	What was their occupation at the time of the study?	6
Gender	4	Was the researcher male or female?	6
Experience and training	5	What experience or training did the researcher have?	6
Relationship with participants			
Relationship established	6	Was a relationship established prior to study commencement?	6
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	6
Interviewer characteristics	8	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	6
Domain 2: Study design			
Theoretical framework			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	6,7
Participant selection			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	5
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	5
Sample size	12	How many participants were in the study?	6
Non-participation	13	How many people refused to participate or dropped out? Reasons?	5
Setting			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	5
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	6
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	table 2 p7
Data collection			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	table 1 p 6
Repeat interviews	18	Were repeat inter views carried out? If yes, how many?	no
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	6
Field notes	20	Were field notes made during and/or after the inter view or focus group?	no
Duration	21	What was the duration of the inter views or focus group?	6
Data saturation	22	Was data saturation discussed?	5
Transcripts returned	23	Were transcripts returned to participants for comment and/or	6

Topic	Item No.	Guide Questions/Description	Reported on Page No.
		correction?	
Domain 3: analysis and findings			
Data analysis			
Number of data coders	24	How many data coders coded the data?	6
Description of the coding tree	25	Did authors provide a description of the coding tree?	no
Derivation of themes	26	Were themes identified in advance or derived from the data?	7
Software	27	What software, if applicable, was used to manage the data?	7
Participant checking	28	Did participants provide feedback on the findings?	no
Reporting			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	8-14
Data and findings consistent	30	Was there consistency between the data presented and the findings?	8-14
Clarity of major themes	31	Were major themes clearly presented in the findings?	8-14
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	8-14

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

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BMJ Open

Barriers to Smoking Cessation in Malaysia– A Grounded Theory Study from the Perspective of Primary Care

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Barriers to Smoking Cessation in Malaysia– A Grounded Theory Study from the Perspective of Primary Care.

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ARTICLE SUMMARY

Strengths and limitations of this study

- As a grounded theory study from the perspective of primary care, this paper contributes to the currently limited literature generated on patients' lived experiences of their quit attempts.
- A diversity of participants from different races and from both high and low nicotine dependence were recruited.
- The use of in-depth qualitative methods allowed detailed account of smokers' experience in smoking cessation.
- No focus group interview was done in this study because of participant reluctance. The opportunity to observe the interaction among participants was unavailable.

ABSTRACT

Objectives This study aims to construct a model of barriers to smoking cessation in the primary care setting.

Design Individual in-depth, semi-structured interviews were audiotaped, then verbatim transcribed and translated when necessary. The data was first independently coded and then collectively discussed for emergent themes using the Straussian grounded theory method.

Participants and Setting Fifty-seven current smokers were recruited from a previous smoking related study carried out in a primary care setting in Malaysia. Current smokers with at least one failed quit attempt were included.

Results A five-theme model emerged from this grounded theory method. (1) Personal and lifestyle factors: Participants were unable to resist the temptation to smoke; (2) Nicotine addiction: Withdrawal symptoms could not be overcome; (3) Social cultural norms: Participants identified accepting cigarettes from friends as a token of friendship to be problematic; (4) Misconception: Perception among smokers that ability to quit was solely based on one's ability to achieve mind control, and perception that stopping smoking will harm the body; and (5) Failed assisted smoking cessation: services were not user friendly and incomprehensible. The themes were organised into 5 concentric circles based on time frame: those actionable in the short term (themes 1 & 2); the medium term (themes 3 & 4); and the long term (theme 5).

Conclusions Five categories of specific beliefs and practices prevented smokers from quitting. Clinicians need to work on these factors to help patients overcome barriers to smoking cessation guided by the time frames recommended by the authors.

(242 words)

INTRODUCTION

Cigarette smoking harms almost every organ of the body resulting in premature death in half of all smokers[1] and out of the over one billion smokers in the world.[2] Quit smoking can save lives. The prevalence of ever having tried to quit smoking varies in different countries. Less than 20% of smokers in China and Malaysia reported recent attempts to quit.[3] The estimated number of attempts before quitting successfully ranged from 6.1 to 142[4]; the abstinence rate at 6 months is only 3%-5% among those who self-quit[5] and 19%-33% among those who opt for pharmacotherapy.[6] We must therefore take a hard look from a variety of perspectives to understand the reasons contributing to failures in smoking cessation.

Eighty percent of smokers in the world live in developing countries.[2] Hence, studies related to quit smoking behaviours conducted in the relevant cultural and socioeconomic settings of developing countries are needed.

Malaysia is a developing country with a complex society–ethnically, linguistically, culturally and in religious faiths. It has three major races of Malays, Chinese and Indians, and numerous indigenous ethnic groups. Such ethnic and cultural diversity can make smoking cessation a more complicated task for medical practitioners.

Approximately 22.8% of Malaysians smoke.[7] The smoking rate for adult males is 43%[7] and for adult females is 1.4%.[7] The high prevalence of current smokers are associated with males, the Malays, the rural population, government servant and low educational background.[7] By ethnic distribution, the prevalence of smokers was the highest among the Malays, followed by Indians, then Chinese.[7] There are no statistics available for indigenous groups. Over the past 12 months, 52.3% of current smokers in Malaysia made an attempt to quit smoking.[7] Overall, less than 10% of current smokers visited a healthcare provider with 75.4% of them having been advised to quit smoking.[7]

This study aims to explore barriers to quitting smoking from the perspective of primary care. We chose a qualitative study because "a qualitative study is able to capture expressive information about beliefs, values, feelings, and motivations that underlie behaviours"[8] of participants. The process of comparing and exploring smokers' answers to our open questions can potentially lead us to 'discover' new patterns of information regarding barriers to quitting smoking in this unique society. Primary care

providers with “whole person medical practice”[9] have the most opportunities to help smokers to quit smoking. Nevertheless, grounded theory study from the perspectives of primary care is lacking. Identifying barriers to quitting is an important step in both the 5As approach (Ask, Advise, Assess, Assist, and Arrange) and the 5Rs approach(Relevance, Risks, Rewards, Roadblocks, and Repetition)[10] in brief intervention. Our study will help primary care practitioners in smoking cessation counseling.

METHODS

Study design

This study was inspired by the results of a smoking related study of ours. “Assessing Airflow limitation Among Smokers in a Primary Care Setting” (https://doi.org/10.21315/mjms2018.25.3.8.). In that study, the authors found a high prevalence of airflow limitation among smokers and from it implied urgency in helping smokers to quit smoking. Grounded theory study design was chosen as it will break new ground in understanding barriers to smoking cessation.This is a "general method of comparative analysis”[11] without pre-existing conceptualization to uncover social processes, a theory can be constructed through the interaction of the data analysed.[12] Details of data analysis are covered below.

Setting and Sample

This study was conducted in Penang, Malaysia between January to February 2017. Participants were recruited by purposive sampling. This is a “non-probability” and a criterion based sampling technique.[13] Subjects were selected based on certain characteristics they have, which will enable a holistic and in-depth exploration of the research topic. From a previous smoking related study in 2016-2017, the authors had a ready list of 191 participants with at least one failed quit attempt. Their demographic profile, smoking history and Fagestrom test for nicotine dependence level were also available. Eligible participants were contacted by telephone calls to explain the purpose and the nature of the study. Participants had the option to meet with investigators at Penang Medical College or their preferred location, including their homes for an interview. Sample size was determined on the basis of theoretical saturation. Subjects from both high (Fagerstrom score 6-10)[14] and low nicotine dependence (Fagestrom score 1-5)[14] were included. Twelve invited smokers refused to participate in this study. Eight of them did not give any reason and the other four stated that they were too busy.

We did not manage to organize any focus group discussion (FGD) as intended because our participants felt that they were too shy to speak in a group

Data collection

Formal informed written consent was obtained from all participants. Fifty-seven one-to-one individual in-depth interviews (IDI) were conducted. IDIs were done by our team of six interviewers. The team comprised of two family physicians and lecturers -Tan KC (male) and Chean KY (female) from Penang Medical College; three medical graduates awaiting internship posting - Liew KW (male), Tan CC (female) and Choi XL (female) and one medical student - Ooi ST (female) from Ireland. Chean KY provided training in conducting the interviews for the rest of the team. Two pilot interviews were done. None of the interviewers were treating doctors or friends of the participants. Techniques used by interviewers were one to one, open−ended questions, semi−structured format, conversational with intense probing for deeper meaning and understanding of the responses. Interviewers followed an interview guide (Table 1) which was consistent with the concept of being 'open' and "discovery" aiming to construct a particular theory. The initial question asked was open ended to facilitate participants to describe, to reflect and to express values in their own words. Subsequent questions were navigated by both participants' response and the pre-determined questions in the guide. Questions were phrased in a way to get very detailed answers from participants.

The interviews were conducted in participants' preferred language which included English, Malay, Mandarin and Hokkien dialect. The duration of interviews took about 20-60 minutes. The interviews were audio-recorded and transcribed verbatim. Interviews conducted in non-English languages were translated.

The interviewers met up with the participants once more to verify the accuracy and to correct any transcription error within 2 weeks of the initial interviews. At the same time, participants were encouraged to provide additional information if they wish.

Table 1: Interview guide

Opening question: Please share with us your experience in quitting smoking in the past. Prompts:

How many times have you tried/did you try (before you succeeded)? When was it?
How long did you stop for?
How did you stop smoking?
What caused you to resume smoking after stopping?
What makes the process difficult?
What is your reflection on this experience? What did you learn from this experience?
Would you like to say something we haven't talked about and that is important for you?

Data analysis

Data was anonymized and transcribed. The researchers started the analysis with line-by-line open coding by all six researchers independently to ensure that the analysis was holistic and inductive. They then met for axial coding and clustering to develop master headings and subsequently higher categories. The process of analysis was facilitated by the techniques of constant comparison, keeping one another informed through the use of memos, continual checking and clustering of emerging themes. Finally, a theoretical model was formulated by linking the fragmented codes.[15] QDA Miner Lite software[16] was used to assist with code frequency analysis, coding retrieval and Boolean text search.

Patient and public involvement

Patients and public were not involved in the design nor the recruitment and conduct of the study. This study was registered and approved by the Medical Research Ethics Committee of the Ministry of Health Malaysia (Ethics approval NMRR-16-2113-33134).

RESULTS

Table 2: Demographic characteristics of participants (n=57)

Demography Characteristics	
Age, years, mean (SD)	58 (10.8)
Mode	50
Range	40-82
Gender, n (%)	
Male	56 (98%)
Female	1 (2%)
Ethnicity, n (%)	
Malay	15 (29.4%)
Chinese	32 (62.7%)

Indian	4 (7.8%)
Education level, n (%)	
Primary education	21 (36.8%)
Lower secondary	19 (33.3%)
Upper secondary	14 (24.6%)
Tertiary	3 (5.3%)
Fagestrom score, n (%)	
High addiction (8-10)	8 (14.0%)
Moderate (5-7)	14 (24.6%)
Low to moderate addiction(3-4)	20 (35.1%)
Low addiction(0-2)	15 (26.3%)
Marital status, n (%)	
Single	10 (17.4%)
Married	43 (75.4%)
Divorced	3 (0.05%)
Widowed	1 (0.02%)
Previous attendance at smoking cessation clinics, n (%)	
Yes	19 (33.3%)
No	38 (66.6%)

Table 2 shows the demographic characteristics of the fifty- seven participants were interviewed

Themes generated from grounded theory

Theme 1: Personal and lifestyle factors

A majority of abstinent participants were unable to resist temptation cues when challenged. Their relapses into smoking were attributed to the influence of friends who smoked in social activities or work places.

> *"I felt it was because I mingled with friends who are all smokers. So, if I am the only person who has the plan to stop smoking and mix with friends who are still smoking, that is why… because the cigarette is exposed. I don't have any choice." (Participant 17)*

Participants conceded that relapses in smoking cessation were often related to impaired capacity for self-control and lack of intrinsic motivation.

> *"Control... No power of control. Self-control weak, rather weak." (Participant 13)*

Some participants related that the decision to resume smoking was rather impulsive.

> *"Yes, it is a mistake. Because I was already not looking for (cigarette) that time, I already was not craving, but just "try, try". After then, it was like learning again, learning again the taste slowly, it was like normal…… tried to discipline ah… eer.. After one week, it was*

very hard, definitely very hard, (I) want to find a cigarette, then (I) must resist, resist the temptation until 2 weeks then it went. By week 3, I feel that even the smells smoke from other smokers make me not comfortable; not because I was craving for a cigarette, but it was because it was like "stinky". After then, gradually one month, two months, it is ok lah. It is stable. By 3rd month and 4th month like that, definitely I was not looking (for a cigarette). After then, I started to have the urge for a cigarette, so I want to try again, so it was my fault. It was like "play… play" smoke, smoke again, not because of addiction oh." (Participant 17)

In addition, withdrawal of extrinsic factors that motivated our participants to stop smoking was the reason for them to resume smoking. A few circumstances had been described. For example, after sickness, out of prison, out of smoking free zone, no longer taking care for a sick mother or being nagged.

"I was admitted to ICU (intensive care unit) for 5 times in IJN (National Heart Institute). So I "smoke back" after my bypass, I resumed smoking." (Participant 28)

Theme 2: Nicotine addiction

Cigarettes contain nicotine, which is highly addictive. Participants reported overpowering withdrawal symptoms upon quitting.

"…Stopped 1-2 months, I felt more tired……If I didn't smoke, I was not able to open my bowel, I became constipated……If I smoked at night, I slept better."(Participant 26)

"I was feeling difficult, breathless at times. I also noticed that I had chest discomfort which was more when I work. I had no choice but to smoke again."(Participant 51)

Cigarettes were perceived as companions. Many smokers reported that they smoke out of habit or feeling bored or lonely.

"I smoke back... because … of addiction... feel like taking cigarette. It is a habit, for example after a meal, it is a habit to smoke cigarette... After breakfast, one sticks, after coffee... Drink, yes... and after lunch ..." (Participant 37)

"It's not because you're addicted or…like, err, withdrawal symptoms….. also not because of stress … Err, just like…past time. (chuckle)…… it's like a hobby la." (Participant 12)

Psychological dependence clearly highlighted the pleasure they experienced from smoking. Participants described experiences which were strongly suggestive of psychological addiction to cigarette smoking, regardless if they realized it or not.

"*That actual problem is our mind, the brain ...because why, you know? When we are not smoking, the brain will tell you: 'There are other smokers there, could you ask him for one cigarette?" (Participant 37)*

"…… because for smoker you feel that something is missing. So, you tend to ask for a stick. Ask for a stick, you know. Then from then starts again. Two sticks….. " (Participant 41)

Theme 3: Socio-cultural Norms

Some participants expressed that the offering of cigarettes from friends and relatives was the main reason for failure to quit. It was a local culture for smokers to offer their friends and relatives cigarettes as a sign of goodwill and a close relationship.

"My friends…. They offer and we don't refuse it. We take it as a token of friendship." (Participant 43)

Moreover, our participants were persuaded by their close contacts to smoke even though they had initially expressed their intention to quit smoking. The contacts gave them the impression that smoking a small amount of cigarettes would not affect their ability to quit smoking. As a result, participants reverted to smoke cigarettes.

"I actually managed to quit – roughly 3 months. After that, I went for a course in Bangi for a week. There, I had colleagues who smoke, they offered me. I said I didn't want because I've quitted. And they said, "Never mind, only one…. So he gave me, and I smoked. After that, after lunch, he offered me again." (Participant 9)

For Muslim participants, the withdrawal of social and religious motivation after Ramadan increased the tendency to relapse.

"The month of "puasa" (fasting month), I was free for the 1 month. Don't want lah, I don't want to smoke in front of my family. Then, when it is during iftar, smoking will waste a lot of time. So, I let myself relax for 1 month. I wanted to rest during fasting month. For my lungs to

cleanse it……..After fasting month, I started back but less (cigarette). Sometimes 3-4 sticks, 5-6 sticks." (Participant 23)

Theme 4: Misconception

Smoking cessation is a complex and dynamic process in that most smokers make multiple stages among smoking, reduction, and abstinence.[17]Some participants perceived quit smoking as just a game of the mind.

"……. *to quit smoking depends on will power. For me, this is a game of the mind. We set our mind, tomorrow, I don't want to smoke tomorrow, then I will not smoke tomorrow." (Participant 23)*

"I smoke for "saja" (for fun), not because of addiction. But if it is due to emotional problems, up to here (point to his head) then there are a lot of problems not solved, and the feeling is up to here (point to head), this is another experience, then there will be just cigarette only. When the mind is not calm, nah….. finish one stick then another again and again." (Participant 17)

Patients often trust their treating doctors and therefore take their doctors' words to heart. This would undoubtedly include tips, advice, beliefs and misconceptions.

"I stopped abruptly, so I felt breathless. Then my family brought me to the hospital …….Then the doctor scolded me, "Did you want to die? You cannot stop (smoking) completely all of a sudden. If you want to stop, you need to come to the hospital and meet the MO (medical officer), the doctor, to get their advice. ..... At least you have to smoke one a day." (Participant 9)

Some participants exaggerated or misinterpreted the effects of smoking cessation as harmful to health.

"*I stopped for a few months then I became frightened. My friends said once stopped, disease will come, also I saw my friend (who) died after stopping (smoking).*" *(Participant 11)*

"*There are side effects when stop smoking, after I stopped smoking, I was diagnosed with high blood pressure and had a heart attack as well." (Participant 28)*

One participant who believed that second-hand smoke was more harmful.

"If I breathe in second hand smoke, it is more poisonous than if I smoke myself." (Participant 1)

It was interesting to also highlight the belief that smoking might in fact be therapeutic.

"*I had that disease (Idiopathic thrombocytopenic purpura) for a long period, I did not know. ..... I suffered from gum bleeding during brushing teeth, sometimes spontaneously. So I resumed smoking, once smoking… the gum bleed stops. .....smoking is good.*" (Participant 33)

One participant commented that hand-rolled tobacco leaves were less hazardous than commercial cigarettes.

"People said "rokok daun" (tobacco leaves) is better compare to a cigarette. I cannot "tahan" (stand) without smoking…so, after discharged from the hospital, my friend recommended "rokok daun"(tobacco leaves) to me. The smell is there…I tried it and I continue to smoke……..At least, this "rokok daun" is better, and I managed to stop the cigarettes." (Participant 49)

Interestingly, there were participants who developed defense mechanisms themselves to ward off the concept that smoking is dangerous/unacceptable. This was particularly true when the participants felt obliged to refrain from smoking in the presence of young children or other family members.

"*Sometimes I smoke alone in my own room. But I…I open the windows. My room has air-conditioner but I don't even turn it on……. "I turn on the fan to blow away all the smoke.*" (Participant 6)

Theme 5: Failed assisted smoking cessation

Some participants tried conventional methods (smoking cessation clinic, nicotine replacement therapy) and alternative methods in their attempts to quit smoking. Most participants expressed that pharmacotherapy was ineffective. This perhaps resulted in a negative impression towards the effectiveness of quit smoking clinics. A range of medications were equally blamed by the participants.

"Smoking cessation clinic does not work. I tried chewing the gum, no use. Not working at all. Whatever medications they gave to stop smoking did not work." (Participant 16)

"I already bought the type of cigarettes, the "blocked", I am not sure if you have heard that before. The one with 3 cigarettes that is like when you smoke, it has no taste. May be you can quit, but I cannot. I brought from the pharmacy." (Participant 18)

The effectiveness of quit smoking clinics was also affected by non-pharmacological factors. These included the accessibility of the clinic and the language spoken. Language barriers were highlighted because there were multiple languages spoken in Malaysia.

"I have been to smoking cessation clinic two times. It is just too troublesome to keep going there." (Participant 27)

"But I have gone there (stop smoking clinic). They were all Malay and my Malay is not very (good)…. I did not really understand." (Participant 1)

Some participants also noted that they did not know the methods available to quit smoking even though they were willing to try. Participants implied that medical practitioners did not convey and educate them methods available to quit smoking.

"Doctors don't teach how to stop. And also nobody help you to stop. Do you think so? So, you don't know the way to stop." (Participant 24)

A descriptive model from grounded theory

Figure 1 presents a descriptive model showing the relationship amongst the five grounded theory themes of participants' perceived reasons for failed quit smoking attempts. Notes accompanying the diagram in figure 1 provided examples of each grounded theory theme.

Insert figure 1 here

The five themes are displayed as five concentric circles to show the relationship of the themes to one another. Theme 1 (Lifestyle & Social Factors) describes the participants perceived the need to "avoid presence of smokers, easy access to cigarettes, impaired self-control, and boredom" in order to avoid nicotine addiction (theme 2). Theme 3 (Social & Cultural Norms) which includes "offering and accepting cigarettes as token of friendship" have had great relapse consequences on abstinent smokers. Theme 4 (Misconception) relates smokers' lived experiences on why they continue to smoke. Some smokers perceive smoking as a "game of the mind" and they can quit anytime they wish to do so; others continue to smoke because of the misconception that stopping smoking will be harmful to health. Theme 5 (Failed Assisted Smoking Method) describes failures in the healthcare delivery system as perceived by smokers. Participants interviewed in this study had negative

experiences of the smoking cessation services received, such as “limited accessibility”, “language barrier” and “Do not know how the methods work”

Time frames for overcoming barriers to smoking cessation

From this grounded theory, a time frame was recommended for changes to overcome each category of barriers, namely the short term (less than 12 months), the medium term (one to three years), and the long term (longer than three years). (Figure 1) The duration of these time frames are based on the current definitions taken from definitions of terms from Wikipedia.[18]

DISCUSSION

1. What is known?

Smoking cessation is a challenging human endeavour both for patients and doctor alike. Despite many decades of trying, mankind is still unable to improve cessation rates very much. Nevertheless, globally we are all still trying. A 2014 systematic review of qualitative and quantitative literature by Twyman et al[19] on six vulnerable groups (low socioeconomic; indigenous; mental illness; homeless; prisoners and at risk youths) described 3 common cessation barriers. These were: smoking for stress management, lack of social support from health and other service providers, and a high prevalence and acceptance of smoking in vulnerable communities.

2. What is new?

Our study adds on to what is known from Twyman et al’s[19] review. New grounds are covered namely; our participants were community based participants. Demographically, the mean age group (SD) was 58 (10.8). In addition, our participants were represented by the 3 major races in Malaysia. A grounded theory design was used. The uniqueness of this study design was the data, namely lived experience of barriers to smoking cessation, which formed the theory that explained the barriers to smoking cessation.

3. Lessons learnt

Theme 3: Offering cigarettes one to another is perceived as a sign of friendship and this cigarette culture practice serves as an impediment to quit smoking in this society. In China, offering cigarettes is a sign of mutual respect during social events.[20,21] It is customary for a subordinate to light up for his

boss.[21] Smokers in our community need to be taught methods of rejecting the offer of cigarettes as reassurance that declining an offer of a cigarette is not rude.

Theme 3: Smokers find it easy to stop smoking during Ramadan due to the religion, cultural and environmental influences.[22] Although many Muslim smokers (97.7%[23]) in Malaysia smoke fewer number of cigarettes during Ramadan, but only 15 % perceive Ramadan as a strong motivator to quit smoking[24] and therefore most relapse after Ramadan. It is also known that such good smoking behaviour changes during Ramadan is associated with those with higher income, high nicotine dependence and those who are not aware that smoking is 'haram'.[22] Such golden opportunity should be seized through the implementation of religious-competent intervention to improve cessation rate.

Theme 4: Our participants revealed a number of misconceptions which were considered to be rather different from those listed in the literature.[25] For example, misinformation and misconceptions led them to believe that reduction in tobacco consumption is acceptable, but if they were to quit smoking entirely, it will cause disease. Second hand smoking is perceived to be more harmful than active smoking, and therefore they believe that in a smoking environment, active smoking is encouraged. In addition, false beliefs that smoking may be therapeutic or smoking with the fan on or hand-rolled cigarettes are less hazardous is present in this community. Some of these serious erroneous believe reflect low levels of knowledge. Therefore, clinicians should first assess and dispel the relevant false beliefs during counseling sessions.

Theme 1 and Theme 2 interactively: To healthcare practitioners, tobacco smoking is regarded as an addiction disease. However, to patients, it is regarded as self-determined lifestyle choice.[26] Such discrepancy was observed in this study. It has long been established that nicotine addiction is the biggest cause of failure in smoking cessation. Nicotine can be as addictive as heroin, cocaine, or alcohol.[27, 28] As a result, attempts to quit smoking are often unsuccessful because of withdrawal, stress, and weight gain.[29] Nevertheless, our participants did not perceive addiction as the major factor of failure, instead they expressed overwhelmingly that quitting smoking is a "game of the mind." Smokers blamed themselves as having poor determination in that stop smoking is a matter of how they control their mind. This finding is consistent with that of a recent quantitative study[30] which showed that most smokers believe willpower is necessary or sufficient for quitting. Such belief in mind control as the tool to quit smoking undermines the use of cessation assistance. The failure to be able to recognise symptoms of addiction of smoking renders smokers to "not believe" in the usefulness of

pharmacotherapy.[31] The use of smoking cessation strategies in our setting has been low[32] and we believe such misconception is an important contributory factor. Participants were reluctant to receive professional help and preferred to "quit" by themselves. A national survey in 2016 in Malaysia revealed that nearly 80% of former smokers quit without any professional intervention.[32] More work is needed to get smokers to accept that cigarette smoking is highly addictive and nicotine addiction is very difficult to strike off. In addition, health care practitioners need to ensure sufficient patient knowledge to improve their confidence to acknowledge withdrawal symptoms and to focus more on the solution during the cessation process.

4. Limitations

This study was based on data from in-depth interviews. No focus groups were done in this study and hence the opportunity to observe the interaction among the participants was lost.

5. Recommendations

We have provided suggestions for applications based on the grounded theory findings in the discussion above. We can use similar grounded theory design to explore theme 2 and theme 5 with the view of defining the extent of ignorance in the symptoms of nicotine addiction; misconceptions; and patient concerns on service provision deficiencies and lack of user-friendliness. With all these efforts, hopefully, we could create better smoking cessation rates.

CONCLUSION

Five categories of specific beliefs and practices prevented smokers from quitting. Clinicians need to work on these identified factors to help patients overcome barriers to smoking cessation guided by the time frames recommended by the authors.

Acknowledgement

We thank all the participants in this study. We are grateful for their involvement and effort.

Authors Contribution

KYC conceived the idea. KYC and LGG contributed to the design of the study. KYC, KWL, CCT, XLC, KCT and STO conducted the individual focus interview, translated and transcribed

independently. KYC, KWL, CCT, XLC, KYC, STO carried out thematic analysis as a group and drafted the original manuscript. KYC and LGG critically revised the manuscript. All authors provided approval of the final manuscript.

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Figure legends

Figure 1. A Grounded theory of barriers to smoking cessation

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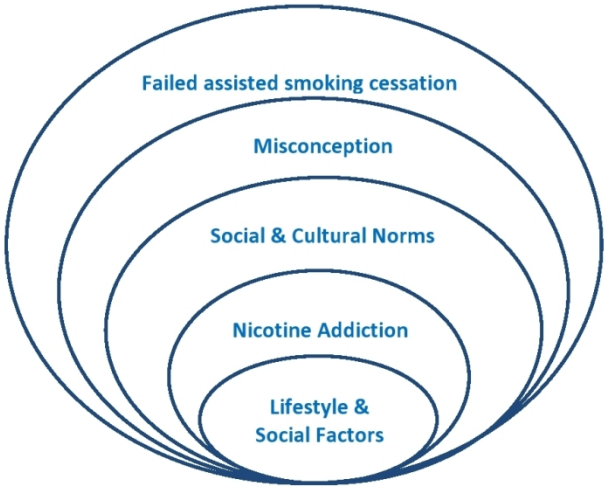

Five categories of themes form the grounded theory of barriers to smoking cessation.
5-**Failed assisted smoking cessation** e.g., limited accessibility, language barrier, and "Do not know how the methods work"-- Need long term time frame (above 3 years) for system change.
4-**Misconception** e.g., perceives smoking cessation as a game of the mind, stopping smoking to be harmful to health--Need medium-term (1 to 3 years) for behaviour change.
3-**Social & Cultural Norms** e.g., social culture of offering and accepting cigarettes as token of friendship---Need medium-term (1 to 3 years) for behaviour change.
2-**Nicotine Addiction** e.g., physical symptoms of withdrawal; or feeling the need to ask for a cigarette from other smokers--Need short term (under 1 year) for behaviour change.
1-**Lifestyle & Social factors** e.g., need to avoid presence of smokers, easy access to cigarettes, impaired self-control, and boredom--- Need short-term (under 1 year) for behaviour change.

104x148mm (300 x 300 DPI)

COREQ (COnsolidated criteria for REporting Qualitative research) Checklist

A checklist of items that should be included in reports of qualitative research. You must report the page number in your manuscript where you consider each of the items listed in this checklist. If you have not included this information, either revise your manuscript accordingly before submitting or note N/A.

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 1: Research team and reflexivity			
Personal characteristics			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	6
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	6
Occupation	3	What was their occupation at the time of the study?	6
Gender	4	Was the researcher male or female?	6
Experience and training	5	What experience or training did the researcher have?	6
Relationship with participants			
Relationship established	6	Was a relationship established prior to study commencement?	6
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	6
Interviewer characteristics	8	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	6
Domain 2: Study design			
Theoretical framework			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	6,7
Participant selection			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	5
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	5
Sample size	12	How many participants were in the study?	6
Non-participation	13	How many people refused to participate or dropped out? Reasons?	5
Setting			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	5
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	6
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	table 2 p7
Data collection			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	table 1 p 6
Repeat interviews	18	Were repeat inter views carried out? If yes, how many?	no
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	6
Field notes	20	Were field notes made during and/or after the inter view or focus group?	no
Duration	21	What was the duration of the inter views or focus group?	6
Data saturation	22	Was data saturation discussed?	5
Transcripts returned	23	Were transcripts returned to participants for comment and/or	6

Topic	Item No.	Guide Questions/Description	Reported on Page No.
		correction?	
Domain 3: analysis and findings			
Data analysis			
Number of data coders	24	How many data coders coded the data?	6
Description of the coding tree	25	Did authors provide a description of the coding tree?	no
Derivation of themes	26	Were themes identified in advance or derived from the data?	7
Software	27	What software, if applicable, was used to manage the data?	7
Participant checking	28	Did participants provide feedback on the findings?	no
Reporting			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	8-14
Data and findings consistent	30	Was there consistency between the data presented and the findings?	8-14
Clarity of major themes	31	Were major themes clearly presented in the findings?	8-14
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	8-14

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

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BMJ Open

Barriers to Smoking Cessation in Malaysia– A Grounded Theory Study from the Perspective of Primary Care

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Barriers to Smoking Cessation in Malaysia– A Grounded Theory Study from the Perspective of Primary Care.

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ABSTRACT

Objectives This study aims to construct a model of barriers to smoking cessation in the primary care setting.

Design Individual in-depth, semi-structured interviews were audiotaped, then verbatim transcribed and translated when necessary. The data was first independently coded and then collectively discussed for emergent themes using the Straussian grounded theory method.

Participants and Setting Fifty-seven current smokers were recruited from a previous smoking related study carried out in a primary care setting in Malaysia. Current smokers with at least one failed quit attempt were included.

Results A five-theme model emerged from this grounded theory method. (1) Personal and lifestyle factors: Participants were unable to resist the temptation to smoke; (2) Nicotine addiction: Withdrawal symptoms could not be overcome; (3) Social cultural norms: Participants identified accepting cigarettes from friends as a token of friendship to be problematic; (4) Misconception: Perception among smokers that ability to quit was solely based on one's ability to achieve mind control, and perception that stopping smoking will harm the body; and (5) Failed assisted smoking cessation: services were not user friendly and incomprehensible. The themes were organised into 5 concentric circles based on time frame: those actionable in the short term (themes 1 & 2); the medium term (themes 3 & 4); and the long term (theme 5).

Conclusions Five categories of specific beliefs and practices prevented smokers from quitting. Clinicians need to work on these factors to help patients overcome barriers to smoking cessation guided by the time frames recommended by the authors.

(242 words)

ARTICLE SUMMARY

Strengths and limitations of this study

- As a grounded theory study from the perspective of primary care, this paper contributes to the currently limited literature generated on patients' lived experiences of their quit attempts.
- A diversity of participants from different races and from both high and low nicotine dependence were recruited.
- The use of in-depth qualitative methods allowed detailed account of smokers' experience in smoking cessation.
- No focus group interview was done in this study because of participant reluctance. The opportunity to observe the interaction among participants was unavailable.

INTRODUCTION

Cigarette smoking harms almost every organ of the body resulting in premature death in half of all smokers[1] and out of the over one billion smokers in the world.[2] Quit smoking can save lives. The prevalence of ever having tried to quit smoking varies in different countries. Less than 20% of smokers in China and Malaysia reported recent attempts to quit.[3] The estimated number of attempts before quitting successfully ranged from 6.1 to 142[4]; the abstinence rate at 6 months is only 3%-5% among those who self-quit[5] and 19%-33% among those who opt for pharmacotherapy.[6] We must therefore take a hard look from a variety of perspectives to understand the reasons contributing to failures in smoking cessation.

Eighty percent of smokers in the world live in developing countries.[2] Hence, studies related to quit smoking behaviours conducted in the relevant cultural and socioeconomic settings of developing countries are needed.

Malaysia is a developing country with a complex society – ethnically, linguistically, culturally and in religious faiths. It has three major races of Malays, Chinese and Indians, and numerous indigenous ethnic groups. Such ethnic and cultural diversity can make smoking cessation a more complicated task for medical practitioners.

Approximately 22.8% of Malaysians smoke.[7] The smoking rate for adult males is 43%[7] and for adult females is 1.4%.[7] The high prevalence of current smokers are associated with males, the Malays, the rural population, government servant and low educational background.[7] By ethnic distribution, the prevalence of smokers was the highest among the Malays, followed by Indians, then Chinese.[7] There are no statistics available for indigenous groups. Over the past 12 months, 52.3% of current smokers in Malaysia made an attempt to quit smoking.[7] Overall, less than 10% of current smokers visited a healthcare provider with 75.4% of them having been advised to quit smoking.[7]

This study aims to explore barriers to quitting smoking from the perspective of primary care. We chose a qualitative study because "a qualitative study is able to capture expressive information about beliefs, values, feelings, and motivations that underlie behaviours"[8] of participants. The process of comparing and exploring smokers' answers to our open questions can potentially lead us to 'discover' new patterns of information regarding barriers to quitting smoking in this unique society. Primary care

providers with “whole person medical practice”[9] have the most opportunities to help smokers to quit smoking. Identifying barriers to quitting is an important step in both the 5As approach (Ask, Advise, Assess, Assist, and Arrange) and the 5Rs approach(Relevance, Risks, Rewards, Roadblocks, and Repetition)[10] in brief intervention. Our study will help primary care practitioners in smoking cessation counseling.

METHODS

Study design

This study was triggered by the results of a smoking related study of ours. “Assessing Airflow limitation Among Smokers in a Primary Care Setting” (https://doi.org/10.21315/mjms2018.25.3.8.). In that study, the authors found a high prevalence of airflow limitation among smokers and from it implied urgency in helping smokers to quit smoking. So the triggered research question is what barriers prevented smoking cessation from take place. Grounded theory study design was chosen as it will break new ground in understanding barriers to smoking cessation from the primary care perspective.This study design may be defined as a "general method of comparative analysis”[11] without pre-existing conceptualization to uncover social processes, a theory can be constructed through the interaction of the data analysed.[12] Details of data analysis are covered below.

Setting and Sample

This study was conducted in Penang, Malaysia between January to February 2017. Participants were recruited by purposive sampling. This is a “non-probability” and a criterion based sampling technique.[13] Subjects were selected based on certain characteristics they have, which will enable a holistic and in-depth exploration of the research topic. From a previous smoking related study in 2016-2017, the authors had a ready list of 191 participants with at least one failed quit attempt. Their demographic profile, smoking history and Fagestrom test for nicotine dependence level were also available. Eligible participants were contacted by telephone calls to explain the purpose and the nature of the study. Participants had the option to meet with investigators at Penang Medical College or their preferred location, including their homes for an interview. Sample size was determined on the basis of theoretical saturation. Subjects from both high (Fagerstrom score 6-10)[14] and low nicotine dependence (Fagestrom score 1-5)[14] were included. Twelve invited smokers refused to participate in this study. Eight of them did not give any reason and the other four stated that they were too busy.

We did not manage to organize any focus group discussion (FGD) as intended because our participants felt that they were too shy to speak in a group

Data collection

Formal informed written consent was obtained from all participants. Fifty-seven one-to-one individual in-depth interviews (IDI) were conducted. IDIs were done by our team of six interviewers. The team comprised of two family physicians and lecturers -Tan KC (male) and Chean KY (female) from Penang Medical College; three medical graduates awaiting internship posting - Liew KW (male), Tan CC (female) and Choi XL (female) and one medical student - Ooi ST (female) from Ireland. Chean KY provided training in conducting the interviews for the rest of the team. Two pilot interviews were done. None of the interviewers were treating doctors or friends of the participants. Techniques used by interviewers were one to one, open−ended questions, semi−structured format, conversational with intense probing for deeper meaning and understanding of the responses. Interviewers followed an interview guide (Table 1) which was consistent with the concept of being 'open' and "discovery" aiming to construct a particular theory. The initial question asked was open ended to facilitate participants to describe, to reflect and to express values in their own words. Subsequent questions were navigated by both participants' response and the pre-determined questions in the guide. Questions were phrased in a way to get very detailed answers from participants.

The interviews were conducted in participants' preferred language which included English, Malay, Mandarin and Hokkien dialect. The duration of interviews took about 20-60 minutes. The interviews were audio-recorded and transcribed verbatim. Interviews conducted in non-English languages were translated.

The interviewers met up with the participants once more to verify the accuracy and to correct any transcription error within 2 weeks of the initial interviews. At the same time, participants were encouraged to provide additional information if they wish.

Table 1: Interview guide

Opening question: Please share with us your experience in quitting smoking in the past. Prompts:

How many times have you tried/did you try (before you succeeded)? When was it?
How long did you stop for?
How did you stop smoking?
What caused you to resume smoking after stopping?
What makes the process difficult?
What is your reflection on this experience? What did you learn from this experience?
Would you like to say something we haven't talked about and that is important for you?

Data analysis

Data was anonymized and transcribed. The researchers started the analysis with line-by-line open coding by all six researchers independently to ensure that the analysis was holistic and inductive. They then met for axial coding and clustering to develop master headings and subsequently higher categories. The process of analysis was facilitated by the techniques of constant comparison, keeping one another informed through the use of memos, continual checking and clustering of emerging themes. Finally, a theoretical model was formulated by linking the fragmented codes.[15] QDA Miner Lite software[16] was used to assist with code frequency analysis, coding retrieval and Boolean text search.

Patient and public involvement

Patients and public were not involved in the design nor the recruitment and conduct of the study. This study was registered and approved by the Medical Research Ethics Committee of the Ministry of Health Malaysia (Ethics approval NMRR-16-2113-33134).

RESULTS

Table 2: Demographic characteristics of participants (n=57)

Demography Characteristics	
Age, years, mean (SD)	58 (10.8)
Range	40-82
Gender, n (%)	
Male	56 (98%)
Female	1 (2%)
Ethnicity, n (%)	
Malay	15 (29.4%)
Chinese	32 (62.7%)

Indian	4 (7.8%)
Education level, n (%)	
Primary education	21 (36.8%)
Lower secondary	19 (33.3%)
Upper secondary	14 (24.6%)
Tertiary	3 (5.3%)
Fagestrom score, n (%)	
High addiction (8-10)	8 (14.0%)
Moderate (5-7)	14 (24.6%)
Low to moderate addiction(3-4)	20 (35.1%)
Low addiction(0-2)	15 (26.3%)
Marital status, n (%)	
Single	10 (17.4%)
Married	43 (75.4%)
Divorced	3 (0.05%)
Widowed	1 (0.02%)
Previous attendance at smoking cessation clinics, n (%)	
Yes	19 (33.3%)
No	38 (66.6%)

Table 2 shows the demographic characteristics of the fifty- seven participants were interviewed

Themes generated from grounded theory

Theme 1: Personal and lifestyle factors

A majority of abstinent participants were unable to resist temptation cues when challenged. Their relapses into smoking were attributed to the influence of friends who smoked in social activities or work places.

> *"I felt it was because I mingled with friends who are all smokers. So, if I am the only person who has the plan to stop smoking and mix with friends who are still smoking, that is why… because the cigarette is exposed. I don't have any choice." (Participant 17)*

Participants conceded that relapses in smoking cessation were often related to impaired capacity for self-control and lack of intrinsic motivation.

> *"Control... No power of control. Self-control weak, rather weak." (Participant 13)*

Some participants related that the decision to resume smoking was rather impulsive.

> *"Yes, it is a mistake. Because I was already not looking for (cigarette) that time, I already was not craving, but just "try, try". After then, it was like learning again, learning again the taste slowly, it was like normal…… tried to discipline ah… eer.. After one week, it was*

very hard, definitely very hard, (I) want to find a cigarette, then (I) must resist, resist the temptation until 2 weeks then it went. By week 3, I feel that even the smells smoke from other smokers make me not comfortable; not because I was craving for a cigarette, but it was because it was like "stinky". After then, gradually one month, two months, it is ok lah. It is stable. By 3rd month and 4th month like that, definitely I was not looking (for a cigarette). After then, I started to have the urge for a cigarette, so I want to try again, so it was my fault. It was like "play… play" smoke, smoke again, not because of addiction oh." (Participant 17)

In addition, withdrawal of extrinsic factors that motivated our participants to stop smoking was the reason for them to resume smoking. A few circumstances had been described. For example, after sickness, out of prison, out of smoking free zone, no longer taking care for a sick mother or being nagged.

"I was admitted to ICU (intensive care unit) for 5 times in IJN (National Heart Institute). So I "smoke back" after my bypass, I resumed smoking." (Participant 28)

Theme 2: Nicotine addiction

Cigarettes contain nicotine, which is highly addictive. Participants reported overpowering withdrawal symptoms upon quitting.

"…Stopped 1-2 months, I felt more tired……If I didn't smoke, I was not able to open my bowel, I became constipated……If I smoked at night, I slept better."(Participant 26)

"I was feeling difficult, breathless at times. I also noticed that I had chest discomfort which was more when I work. I had no choice but to smoke again."(Participant 51)

Cigarettes were perceived as companions. Many smokers reported that they smoke out of habit or feeling bored or lonely.

"I smoke back... because … of addiction... feel like taking cigarette. It is a habit, for example after a meal, it is a habit to smoke cigarette... After breakfast, one sticks, after coffee... Drink, yes... and after lunch ..." (Participant 37)

"It's not because you're addicted or…like, err, withdrawal symptoms….. also not because of stress … Err, just like…past time. (chuckle)…… it's like a hobby la." (Participant 12)

Psychological dependence clearly highlighted the pleasure they experienced from smoking. Participants described experiences which were strongly suggestive of psychological addiction to cigarette smoking, regardless if they realized it or not.

"*That actual problem is our mind, the brain ...because why, you know? When we are not smoking, the brain will tell you: 'There are other smokers there, could you ask him for one cigarette?" (Participant 37)*

"…… because for smoker you feel that something is missing. So, you tend to ask for a stick. Ask for a stick, you know. Then from then starts again. Two sticks….. " (Participant 41)

Theme 3: Socio-cultural Norms

Some participants expressed that the offering of cigarettes from friends and relatives was the main reason for failure to quit. It was a local culture for smokers to offer their friends and relatives cigarettes as a sign of goodwill and a close relationship.

"My friends…. They offer and we don't refuse it. We take it as a token of friendship." (Participant 43)

Moreover, our participants were persuaded by their close contacts to smoke even though they had initially expressed their intention to quit smoking. The contacts gave them the impression that smoking a small amount of cigarettes would not affect their ability to quit smoking. As a result, participants reverted to smoke cigarettes.

"I actually managed to quit – roughly 3 months. After that, I went for a course in Bangi for a week. There, I had colleagues who smoke, they offered me. I said I didn't want because I've quitted. And they said, "Never mind, only one…. So he gave me, and I smoked. After that, after lunch, he offered me again." (Participant 9)

For Muslim participants, the withdrawal of social and religious motivation after Ramadan increased the tendency to relapse.

"The month of "puasa" (fasting month), I was free for the 1 month. Don't want lah, I don't want to smoke in front of my family. Then, when it is during iftar, smoking will waste a lot of time. So, I let myself relax for 1 month. I wanted to rest during fasting month. For my lungs to

cleanse it……..After fasting month, I started back but less (cigarette). Sometimes 3-4 sticks, 5-6 sticks." (Participant 23)

Theme 4: Misconception

Smoking cessation is a complex and dynamic process in that most smokers make multiple stages among smoking, reduction, and abstinence.[17]Some participants perceived quit smoking as just a game of the mind.

"……. *to quit smoking depends on will power. For me, this is a game of the mind. We set our mind, tomorrow, I don't want to smoke tomorrow, then I will not smoke tomorrow." (Participant 23)*

"I smoke for "saja" (for fun), not because of addiction. But if it is due to emotional problems, up to here (point to his head) then there are a lot of problems not solved, and the feeling is up to here (point to head), this is another experience, then there will be just cigarette only. When the mind is not calm, nah….. finish one stick then another again and again." (Participant 17)

Patients often trust their treating doctors and therefore take their doctors' words to heart. This would undoubtedly include tips, advice, beliefs and misconceptions.

"I stopped abruptly, so I felt breathless. Then my family brought me to the hospital …….Then the doctor scolded me, "Did you want to die? You cannot stop (smoking) completely all of a sudden. If you want to stop, you need to come to the hospital and meet the MO (medical officer), the doctor, to get their advice. ..... At least you have to smoke one a day." (Participant 9)

Some participants exaggerated or misinterpreted the effects of smoking cessation as harmful to health.

"*I stopped for a few months then I became frightened. My friends said once stopped, disease will come, also I saw my friend (who) died after stopping (smoking).*" *(Participant 11)*

"*There are side effects when stop smoking, after I stopped smoking, I was diagnosed with high blood pressure and had a heart attack as well." (Participant 28)*

One participant who believed that second-hand smoke was more harmful.

"If I breathe in second hand smoke, it is more poisonous than if I smoke myself." (Participant 1)

It was interesting to also highlight the belief that smoking might in fact be therapeutic.

"*I had that disease (Idiopathic thrombocytopenic purpura) for a long period, I did not know. ..... I suffered from gum bleeding during brushing teeth, sometimes spontaneously. So I resumed smoking, once smoking… the gum bleed stops. .....smoking is good.*" (Participant 33)

One participant commented that hand-rolled tobacco leaves were less hazardous than commercial cigarettes.

"People said "rokok daun" (tobacco leaves) is better compare to a cigarette. I cannot "tahan" (stand) without smoking…so, after discharged from the hospital, my friend recommended "rokok daun"(tobacco leaves) to me. The smell is there…I tried it and I continue to smoke……..At least, this "rokok daun" is better, and I managed to stop the cigarettes." (Participant 49)

Interestingly, there were participants who developed defense mechanisms themselves to ward off the concept that smoking is dangerous/unacceptable. This was particularly true when the participants felt obliged to refrain from smoking in the presence of young children or other family members.

"*Sometimes I smoke alone in my own room. But I…I open the windows. My room has air-conditioner but I don't even turn it on……. "I turn on the fan to blow away all the smoke.*" (Participant 6)

Theme 5: Failed assisted smoking cessation

Some participants tried conventional methods (smoking cessation clinic, nicotine replacement therapy) and alternative methods in their attempts to quit smoking. Most participants expressed that pharmacotherapy was ineffective. This perhaps resulted in a negative impression towards the effectiveness of quit smoking clinics. A range of medications were equally blamed by the participants.

"Smoking cessation clinic does not work. I tried chewing the gum, no use. Not working at all. Whatever medications they gave to stop smoking did not work." (Participant 16)

"I already bought the type of cigarettes, the "blocked", I am not sure if you have heard that before. The one with 3 cigarettes that is like when you smoke, it has no taste. May be you can quit, but I cannot. I brought from the pharmacy." (Participant 18)

The effectiveness of quit smoking clinics was also affected by non-pharmacological factors. These included the accessibility of the clinic and the language spoken. Language barriers were highlighted because there were multiple languages spoken in Malaysia.

"I have been to smoking cessation clinic two times. It is just too troublesome to keep going there." (Participant 27)

"But I have gone there (stop smoking clinic). They were all Malay and my Malay is not very (good)…. I did not really understand." (Participant 1)

Some participants also noted that they did not know the methods available to quit smoking even though they were willing to try. Participants implied that medical practitioners did not convey and educate them methods available to quit smoking.

"Doctors don't teach how to stop. And also nobody help you to stop. Do you think so? So, you don't know the way to stop." (Participant 24)

A descriptive model from grounded theory

Figure 1 presents a descriptive model showing the relationship amongst the five grounded theory themes of participants' perceived reasons for failed quit smoking attempts. Notes accompanying the diagram in figure 1 provided examples of each grounded theory theme.

Insert figure 1 here

The five themes are displayed as five concentric circles to show the relationship of the themes to one another. Theme 1 (Lifestyle & Social Factors) describes the participants perceived the need to "avoid presence of smokers, easy access to cigarettes, impaired self-control, and boredom" in order to avoid nicotine addiction (theme 2). Theme 3 (Social & Cultural Norms) which includes "offering and accepting cigarettes as token of friendship" have had great relapse consequences on abstinent smokers. Theme 4 (Misconception) relates smokers' lived experiences on why they continue to smoke. Some smokers perceive smoking as a "game of the mind" and they can quit anytime they wish to do so; others continue to smoke because of the misconception that stopping smoking will be harmful to health. Theme 5 (Failed Assisted Smoking Method) describes failures in the healthcare delivery system as perceived by smokers. Participants interviewed in this study had negative

experiences of the smoking cessation services received, such as “limited accessibility”, “language barrier” and “Do not know how the methods work”

Time frames for overcoming barriers to smoking cessation

From this grounded theory, a time frame was recommended for changes to overcome each category of barriers, namely the short term (less than 12 months), the medium term (one to three years), and the long term (longer than three years). (Figure 1) The duration of these time frames are based on the current definitions taken from definitions of terms from Wikipedia.[18]

DISCUSSION

Smoking cessation is a challenging human endeavour both for patients and doctor alike. Despite many decades of trying, mankind is still unable to improve cessation rates very much. Nevertheless, globally we are all still trying. A 2014 systematic review of qualitative and quantitative literature by Twyman et al[19] on six vulnerable groups (low socioeconomic; indigenous; mental illness; homeless; prisoners and at risk youths) described 3 common cessation barriers. These were: smoking for stress management, lack of social support from health and other service providers, and a high prevalence and acceptance of smoking in vulnerable communities.

Our study adds on to what is known from Twyman et al’s[19] review. New grounds are covered namely; our participants were community based participants. Demographically, the mean age group (SD) was 58 (10.8). In addition, our participants were represented by the 3 major races in Malaysia. A grounded theory design was used. The uniqueness of this study design was the data, namely lived experience of barriers to smoking cessation, which formed the theory that explained the barriers to smoking cessation.

There are a few lessons learnt from this study:

a) Theme 3: Offering cigarettes one to another is perceived as a sign of friendship and this cigarette culture practice serves as an impediment to quit smoking in this society. In China, offering cigarettes is a sign of mutual respect during social events.[20,21] It is customary for a subordinate to light up for his

boss.[21] Smokers in our community need to be taught methods of rejecting the offer of cigarettes as reassurance that declining an offer of a cigarette is not rude.

b)Theme 3: Smokers find it easy to stop smoking during Ramadan due to the religion, cultural and environmental influences.[22] Although many Muslim smokers (97.7%[23]) in Malaysia smoke fewer number of cigarettes during Ramadan, but only 15 % perceive Ramadan as a strong motivator to quit smoking[24] and therefore most relapse after Ramadan. It is also known that such good smoking behaviour changes during Ramadan is associated with those with higher income, high nicotine dependence and those who are not aware that smoking is 'haram'.[22] Such golden opportunity should be seized through the implementation of religious-competent intervention to improve cessation rate.

c)Theme 4: Our participants revealed a number of misconceptions which were considered to be rather different from those listed in the literature.[25] For example, misinformation and misconceptions led them to believe that reduction in tobacco consumption is acceptable, but if they were to quit smoking entirely, it will cause disease. Second hand smoking is perceived to be more harmful than active smoking, and therefore they believe that in a smoking environment, active smoking is encouraged. In addition, false beliefs that smoking may be therapeutic or smoking with the fan on or hand-rolled cigarettes are less hazardous is present in this community. Some of these serious erroneous believe reflect low levels of knowledge. Therefore, clinicians should first assess and dispel the relevant false beliefs during counseling sessions.

d) Theme 1 and Theme 2 interactively: To healthcare practitioners, tobacco smoking is regarded as an addiction disease. However, to patients, it is regarded as self-determined lifestyle choice.[26] Such discrepancy was observed in this study. It has long been established that nicotine addiction is the biggest cause of failure in smoking cessation. Nicotine can be as addictive as heroin, cocaine, or alcohol.[27, 28] As a result, attempts to quit smoking are often unsuccessful because of withdrawal, stress, and weight gain.[29] Nevertheless, our participants did not perceive addiction as the major factor of failure, instead they expressed overwhelmingly that quitting smoking is a "game of the mind." Smokers blamed themselves as having poor determination in that stop smoking is a matter of how they control their mind. This finding is consistent with that of a recent quantitative study[30] which showed that most smokers believe willpower is necessary or sufficient for quitting. Such belief in mind control as the tool to quit smoking undermines the use of cessation assistance. The failure to be able

to recognise symptoms of addiction of smoking renders smokers to “not believe” in the usefulness of pharmacotherapy.[31] The use of smoking cessation strategies in our setting has been low[32] and we believe such misconception is an important contributory factor. Participants were reluctant to receive professional help and preferred to “quit” by themselves. A national survey in 2016 in Malaysia revealed that nearly 80% of former smokers quit without any professional intervention.[32] More work is needed to get smokers to accept that cigarette smoking is highly addictive and nicotine addiction is very difficult to strike off. In addition, health care practitioners need to ensure sufficient patient knowledge to improve their confidence to acknowledge withdrawal symptoms and to focus more on the solution during the cessation process.

Limitations

The main limitation of this study is that only in-depth interview and no focus group interviews were conducted. We did not manage to organize any focus group interview because the participants were too shy to speak in a group. While the opportunity to observe the interaction among the participants was lost, we managed to gain a more in-depth, detailed account of smokers’ experience without them feeling inhibited to speak in a group.

Another possible limitation is selection bias. The highest grade completed by majority (70.1%) of the participants was either primary school or lower secondary education and this could have resulted a “less-educated-population”. Nonetheless, we think the data obtained in our study are sufficiently robust to describe reasons contributing to failures in smoking cessation in this community.

Implications and Recommendations

We have provided suggestions for applications based on the grounded theory findings in the discussion above. We can use similar grounded theory design to explore theme 2 and theme 5 with the view of defining the extent of ignorance in the symptoms of nicotine addiction; misconceptions; and patient concerns on service provision deficiencies and lack of user-friendliness.

In addition, the themes of this model serve as a checklist for clinicians when exploring barriers to smoking cessation. In particular, in step 4 of both the 5A[10] (assist) techniques and 5R[10] (Roadblock) technique of brief intervention for smoking cessation so that appropriate action plan can be tailored accordingly. With all these efforts, hopefully, we could create better smoking cessation rates.

CONCLUSION

Five categories of specific beliefs and practices prevented smokers from quitting. Clinicians need to work on these identified factors to help patients overcome barriers to smoking cessation guided by the time frames recommended by the authors. This study highlighted the importance of socio-cultural environment and misconception as factors contributing to the failure to quit smoking in this community. Educating smokers to dispel their wrong beliefs is crucial. Development of religiously and culturally-competent intervention should be considered to prevent relapse.

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Authors Contribution

KYC conceived the idea. KYC and LGG contributed to the design of the study. KYC, KWL, CCT, XLC, KCT and STO conducted the individual focus interview, translated and transcribed independently. KYC, KWL, CCT, XLC, KYC, STO carried out thematic analysis as a group and drafted the original manuscript. KYC and LGG critically revised the manuscript. All authors provided approval of the final manuscript.

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Competing interests None declared.

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Provenance and peer review Not commissioned; externally peer reviewed.

Data sharing statement All requests should be directed to the corresponding author.

Figure legends

Figure 1. A Grounded theory of barriers to smoking cessation

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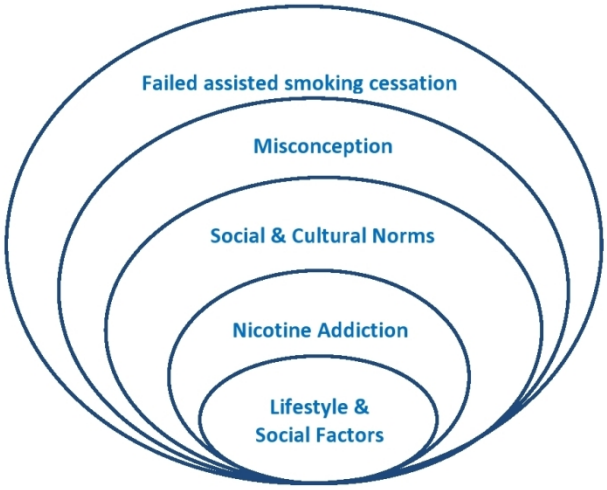

Five categories of themes form the grounded theory of barriers to smoking cessation.
5-**Failed assisted smoking cessation** e.g., limited accessibility, language barrier, and "Do not know how the methods work"-- Need long term time frame (above 3 years) for system change.
4-**Misconception** e.g., perceives smoking cessation as a game of the mind, stopping smoking to be harmful to health--Need medium-term (1 to 3 years) for behaviour change.
3-**Social & Cultural Norms** e.g., social culture of offering and accepting cigarettes as token of friendship---Need medium-term (1 to 3 years) for behaviour change.
2-**Nicotine Addiction** e.g., physical symptoms of withdrawal; or feeling the need to ask for a cigarette from other smokers--Need short term (under 1 year) for behaviour change.
1-**Lifestyle & Social factors** e.g., need to avoid presence of smokers, easy access to cigarettes, impaired self-control, and boredom--- Need short-term (under 1 year) for behaviour change.

104x148mm (300 x 300 DPI)

COREQ (COnsolidated criteria for REporting Qualitative research) Checklist

A checklist of items that should be included in reports of qualitative research. You must report the page number in your manuscript where you consider each of the items listed in this checklist. If you have not included this information, either revise your manuscript accordingly before submitting or note N/A.

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 1: Research team and reflexivity			
Personal characteristics			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	6
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	6
Occupation	3	What was their occupation at the time of the study?	6
Gender	4	Was the researcher male or female?	6
Experience and training	5	What experience or training did the researcher have?	6
Relationship with participants			
Relationship established	6	Was a relationship established prior to study commencement?	6
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	6
Interviewer characteristics	8	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	6
Domain 2: Study design			
Theoretical framework			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	6,7
Participant selection			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	5
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	5
Sample size	12	How many participants were in the study?	6
Non-participation	13	How many people refused to participate or dropped out? Reasons?	5
Setting			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	5
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	6
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	table 2 p7
Data collection			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	table 1 p 6
Repeat interviews	18	Were repeat inter views carried out? If yes, how many?	no
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	6
Field notes	20	Were field notes made during and/or after the inter view or focus group?	no
Duration	21	What was the duration of the inter views or focus group?	6
Data saturation	22	Was data saturation discussed?	5
Transcripts returned	23	Were transcripts returned to participants for comment and/or	6

Topic	Item No.	Guide Questions/Description	Reported on Page No.
		correction?	
Domain 3: analysis and findings			
Data analysis			
Number of data coders	24	How many data coders coded the data?	6
Description of the coding tree	25	Did authors provide a description of the coding tree?	no
Derivation of themes	26	Were themes identified in advance or derived from the data?	7
Software	27	What software, if applicable, was used to manage the data?	7
Participant checking	28	Did participants provide feedback on the findings?	no
Reporting			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	8-14
Data and findings consistent	30	Was there consistency between the data presented and the findings?	8-14
Clarity of major themes	31	Were major themes clearly presented in the findings?	8-14
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	8-14

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

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Barriers to Smoking Cessation – A Qualitative Study from the Perspective of Primary Care in Malaysia.

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Keywords: smoking cessation strategies, qualitative study, Malaysia, grounded theory, primary care, barriers.

ABSTRACT

Objectives This qualitative study aims to construct a model of the barriers to smoking cessation in the primary care setting.

Design Individual in-depth, semi-structured interviews were audio taped, then verbatim transcribed and translated when necessary. The data was first independently coded and then collectively discussed for emergent themes using the Straussian grounded theory method.

Participants and Setting Fifty-seven current smokers were recruited from a previous smoking related study carried out in a primary care setting in Malaysia. Current smokers with at least one failed quit attempts were included.

Results A five-theme model emerged from this grounded theory method. (1) Personal and lifestyle factors: Participants were unable to resist the temptation to smoke; (2) Nicotine addiction: Withdrawal symptoms could not be overcome; (3) Social cultural norms: Participants identified accepting cigarettes from friends as a token of friendship to be problematic; (4) Misconception: Perception among smokers that ability to quit was solely based on one's ability to achieve mind control, and perception that stopping smoking will harm the body; and (5) Failed assisted smoking cessation: Smoking cessation services were not felt to be user-friendly and were poorly understood. The themes were organised into 5 concentric circles based on time frame: those actionable in the short term (themes 1 & 2); and the long term (theme 3, 4, 5).

Conclusions Five themes of specific beliefs and practices prevented smokers from quitting. Clinicians need to work on these barriers, which can be guided by the recommended time frames to help patients to succeed in smoking cessation.

(249 words)

ARTICLE SUMMARY

Strengths and limitations of this study

- As a qualitative study from the primary care perspective, this paper contributes to the limited literature available on smokers' lived experiences of their attempts to quit smoking.
- A diversity of participants from different races and from both high and low nicotine dependence were recruited.
- The use of in-depth qualitative methods allowed detailed account of smokers' experience in smoking cessation.
- Focus group interview was not performed in this study because of participant reluctance and hence the opportunity to observe the interaction among participants was unavailable.

INTRODUCTION

Cigarette smoking harms almost every organ of the body resulting in premature death in half of all smokers[1] , and unfortunately there are over one billion smokers in the world.[2] The prevalence of ever having tried to quit smoking varies in different countries, for example, less than 20% of smokers in China and Malaysia reported recent attempts to quit.[3] Additionally, the estimated number of attempts before quitting successfully varied widely, ranging from 6.1 to 142.[4] In those who tried to quit smoking, the abstinence rate at 6 months is only 3%-5% among those who self-quit[5] and 19%-33% among those who opt for pharmacotherapy.[6] We must therefore take an in depth look from a variety of perspectives to understand the reasons contributing to failures in smoking cessation.

Eighty percent of smokers in the world live in developing countries.[2] Hence, studies related to quit smoking behaviours conducted in the relevant cultural and socioeconomic settings of developing countries are needed.

Malaysia is a developing country with a complex society – ethnically, linguistically, culturally and religious faiths. It has three major races of Malays, Chinese and Indians, with numerous indigenous ethnic groups. Such ethnic and cultural diversity may make smoking cessation a more complicated task for medical practitioners.

Approximately 22.8% of Malaysians smoke.[7] The smoking rate for adult males is 43%[7] and for adult females is 1.4%.[7] The high prevalence of current smokers are associated with males, Malays, the rural population, government servant and those with low educational background.[7] By ethnic distribution, the prevalence of smokers was the highest among the Malays, followed by Indians, then Chinese.[7] There are no statistics available for indigenous groups. Over the past 12 months, 52.3% of current smokers in Malaysia made an attempt to quit smoking.[7] Overall, less than 10% of current smokers visited a healthcare provider with 75.4% of them having been advised to quit smoking.[7]

This study was triggered by the results of one of our smoking related study, “Assessing Airflow limitation Among Smokers in a Primary Care Setting” (https://doi.org/10.21315/mjms2018.25.3.8.). In that study, the authors found a high prevalence of airflow limitation among smokers and from it implied urgency in helping smokers to quit smoking. So the triggered research question is what barriers prevented smoking cessation from take place.

This study aims to explore barriers to quitting smoking from the perspective of primary care. We chose a qualitative study because "this will be able to capture expressive information about beliefs, values, feelings, and motivations that underlie the behaviour"[8] of participants. The process of comparing and exploring smokers' answers to our open questions can also potentially lead us to 'discover' new patterns of information regarding barriers to quitting smoking in this unique society. Primary care providers with "whole person medical practice"[9] have the most opportunities to help smokers to quit smoking. Identifying barriers to quitting is an important step in both the 5As approach (Ask, Advise, Assess, Assist, and Arrange) and the 5Rs approach(Relevance, Risks, Rewards, Roadblocks, and Repetition)[10] in brief intervention. Our study will help primary care practitioners in smoking cessation counseling.

METHODS

Study design

A grounded theory study method was chosen as this will allow a new understanding of the barriers to smoking cessation from the primary care perspective.This study method may be defined as a "general method of comparative analysis"[11] without pre-existing conceptualization to uncover social processes. A theory is then constructed through the data analysis[12],which is presented.

Setting and Sample

This study was conducted in Penang, Malaysia during January and February 2017. We recruited participants using purposive sampling, which is a "non-probability" and a criterion based sampling technique.[13] Subjects were selected based on certain characteristics, which will enable a holistic and in-depth exploration of the research topic. From a previous smoking related study in 2016-2017, the authors had a ready list of 191 participants with at least one failed quit attempts. Their demographic profile, smoking history and Fagestrom test for nicotine dependence level were also available. We contacted the eligible participants by telephone to explain the purpose and the nature of the study. Participants had the option to meet with investigators at RCSI & UCD Malaysia Campus or an alternative preferred location (including their homes) for an interview. Sample size was determined on the basis of theoretical saturation. Subjects from both high nicotine dependence (Fagerstrom score 6-10)[14] and low nicotine dependence (Fagestrom score 1-5)[14] were included. Twelve invited smokers refused to participate in the study. Eight of them did not give any reason and four stated that they

were too busy. We did not manage to organize any focus group discussion (FGD) as intended because our participants felt that they were too shy to speak in such a group format. In the smoking cessation barriers model presented in this paper, we defined short term potential modifiable strategies as less than 3 months of smoking abstinence[15, 16] and potential long term strategies as 12 months or longer of smoking abstinence[17, 18] based on study designs reported in the current literature (2015 to 2019) obtained from PubMed searches.

Data collection

Informed written consent was obtained from all participants. Fifty-seven one-to-one individual in-depth interviews (IDI) were conducted by a team of six researchers. The team comprised of two family physicians and lecturers - KCT (male) and KYC (female) from RCSI & UCD Malaysia Campus; three medical graduates awaiting internship posting - KWL (male), CCT (female) and XLC (female) and one medical student - STO (female) from Ireland. KYC conducted two pilot interviews and provided training in conducting the interviews for the rest of the team. None of the interviewers were known to the participants. The technique used by interviewers was one to one, open−ended questions, semi−structured format, conversational with intense probing for deeper meaning and understanding of the responses. Interviewers followed an interview guide (Table 1) which was consistent with the concept of being 'open' and "discovery" aiming to construct a particular theory. The initial question asked was open ended to facilitate participants to describe, to reflect and to express values in their own words. Subsequent questions were determined by both the participants' response and the pre-determined questions in the interview guide (Table 1). Questions were phrased in a way to get lengthy, detailed answers from participants.

The interviews were conducted in participants' preferred language which included English, Malay, Mandarin and Hokkien dialect. The duration of interviews took between 20 and 60 minutes. The interviews were audio-recorded and transcribed verbatim. Non-English interviews were translated to English by the respective interviewers.

The interviewers met up with the participants within two weeks of the interviews to verify the accuracy and to correct any transcription errors. At the second encounter, participants were encouraged to provide additional information if they wished.

Table 1. Interview guide

Opening question:
Please share with us your experience in quitting smoking in the past.
Prompts:
How many times have you tried/did you try (before you succeeded)? When was it?
How long did you stop for?
How did you stop smoking?
What caused you to resume smoking after stopping?
What makes the process difficult?
What is your reflection on this experience? What did you learn from this experience?
Would you like to say something we haven't talked about and that is important for you?

Data analysis

Data was anonymized and transcribed. All six researchers started line-by-line open coding independently to ensure that the analysis was holistic and inductive. The researchers then met for axial coding and clustering to develop master headings and subsequently higher categories. Fragmented codes were linked by using the techniques of constant comparison, continual checking and clustering of emerging themes to formulate a theoretical model.[19] QDA Miner Lite software[20] was used to assist with code frequency analysis, coding retrieval and Boolean text search.

Patient and public involvement

No patient or public were involved in the design, recruitment and conduct of the study.

RESULTS

Table 2. Demographic characteristics of participants (n=57)

Demography Characteristics	
Age, years, mean (SD)	58 (10.8)
Range	40-82
Gender, n (%)	
Male	56 (98%)
Female	1 (2%)
Ethnicity, n (%)	
Malay	15 (29.4%)
Chinese	32 (62.7%)

Indian	4 (7.8%)
Education level, n (%)	
Primary education	21 (36.8%)
Lower secondary	19 (33.3%)
Upper secondary	14 (24.6%)
Tertiary	3 (5.3%)
Fagestrom score, n (%)	
High addiction (8-10)	8 (14.0%)
Moderate (5-7)	14 (24.6%)
Low to moderate addiction(3-4)	20 (35.1%)
Low addiction(0-2)	15 (26.3%)
Marital status, n (%)	
Single	10 (17.4%)
Married	43 (75.4%)
Divorced	3 (0.05%)
Widowed	1 (0.02%)
Previous attendance at smoking cessation clinics, n (%)	
Yes	19 (33.3%)
No	38 (66.6%)

We interviewed fifty-seven participants. Table 2 shows the participants' demographic characteristics in detail.

Themes generated from grounded theory

Theme 1: Personal and lifestyle factors

A majority of abstinent participants were unable to resist temptation cues when challenged. Their smoking relapses were attributed to the influence of friends who smoked in social activities or work places.

> *"I felt it was because I mingled with friends who are all smokers. So, if I am the only person who has the plan to stop smoking and mix with friends who are still smoking, that is why… because the cigarette is exposed. I don't have any choice." (Participant 17)*

Participants conceded that relapses in smoking cessation were often related to impaired capacity for self-control and lack of intrinsic motivation.

> *"Control... No power of control. Self-control is weak, rather weak." (Participant 13)*

Some participants related that the decision to resume smoking was rather impulsive.

> *"Yes, it is a mistake. Because I was already not looking for (cigarette) that time, I already was not craving, but just "try, try". After then, it was like learning again, learning again the*

taste slowly, it was like normal…… tried to discipline ah, err. After one week, it was very hard, definitely very hard, (I) want to find a cigarette, then (I) must resist, resist the temptation until 2 weeks then it went. By week 3, I feel that even the smells smoke from other smokers make me not comfortable; not because I was craving for a cigarette, but it was because it was like "stinky". After then, gradually one month, two months, it is ok lah. It is stable. By 3rd month and 4th month like that, definitely I was not looking (for a cigarette). After then, I started to have the urge for a cigarette, so I want to try again, so it was my fault. It was like "play… play" smoke, smoke again, not because of addiction oh." (Participant 17)

In addition, the withdrawal of extrinsic factors that motivated our participants to stop smoking was felt to be the reason for the resumption of smoking. For example, recovering after sickness, release from prison, no longer in a smoking free zone, no longer taking care of a sick relative or no longer being nagged.

"I was admitted to ICU (intensive care unit) for 5 times in IJN (National Heart Institute). So I smoked again after my bypass, I resumed smoking." (Participant 28)

Theme 2: Nicotine addiction

Cigarettes contain highly addictive nicotine, and participants did report overpowering withdrawal symptoms upon quitting.

"…Stopped 1-2 months, I felt more tired……If I didn't smoke, I was not able to open my bowel, I became constipated……If I smoked at night, I slept better."(Participant 26)

"I was feeling difficult, breathless at times. I also noticed that I had chest discomfort which was more when I work. I had no choice but to smoke again."(Participant 51)

Psychological dependence was clearly highlighted by the pleasure they experienced from smoking. Participants described experiences which were strongly suggestive of psychological addiction to cigarette smoking, regardless if they realized it or not.

"*That actual problem is our mind, the brain ...because why, you know? When we are not smoking, the brain will tell you: 'There are other smokers there, could you ask him for one cigarette?" (Participant 37)*

"…… because for smoker, you feel that something is missing. So, you tend to ask for a stick. Ask for a stick, you know. Then from then starts again. Two sticks….. " (Participant 41)

Theme 3: Socio-cultural Norms

Some participants expressed that the offering of cigarettes from friends and relatives was the main reason for their failure to quit. It was normal for smokers to offer their friends and relatives cigarettes as a sign of goodwill and a close relationship.

"My friends…. They offer and we don't refuse it. We take it as a token of friendship." (Participant 43)

In some participants, despite having informed their peers that they had quit smoking, they were still coerced into smoking. The peers gave them the impression that smoking a small amount of cigarettes would not affect their ability to quit smoking.

"I actually managed to quit – roughly 3 months. After that, I went for a course in Bangi for a week. There, I had colleagues who smoke, they offered me. I said I didn't want (to smoke) because I've quitted. And they said, "Never mind, only one…. So he gave me, and I smoked. After that, after lunch, he offered me again." (Participant 9)

For Muslim participants, the withdrawal of social and religious motivation after Ramadan (Fasting month) also increased the tendency to relapse.

"The month of "puasa" (the fasting month), I was free for the 1 month. Don't want lah, I don't want to smoke in front of my family. Then, when it is during "iftar", smoking will waste a lot of time. So, I let myself relax for 1 month. I wanted to rest during fasting month. For my lungs to cleanse it……...After the fasting month, I started back but less (cigarette). Sometimes 3-4 sticks, 5-6 sticks." (Participant 23)

Theme 4: Misconception

Smoking cessation is a complex and dynamic process and most smokers make multiple attempts of reduction, and abstinence.[21] Some participants perceived smoking cessation as just a game of the mind.

"……. *to quit smoking depends on will power. For me, this is a game of the mind. We set our mind, err, tomorrow, I don't want to smoke tomorrow, then I will not smoke tomorrow."*

(Participant 23)

"I smoke for "saja" (just for fun), not because of addiction. But, if it is due to emotional problems, up to here (point to his head); there are a lot of problems not solved, and the feeling is up to here (point to head), this is another experience, then there will be just cigarette only. When the mind is not calm, err, finish one stick then another, again and again." (Participant 17)

Patients usually trust their doctors and therefore take their doctors' recommendation seriously. Ideally, this advice would include cessation tips, and the correction of false beliefs and misconceptions.

"I stopped abruptly, so I felt breathless. Then my family brought me to the hospital …….Then the doctor scolded me, "Did you want to die? You cannot stop (smoking) completely all of a sudden. If you want to stop, you need to come to the hospital and meet with the MO (medical officer), the doctor, to get their advice. ..... At least you have to smoke one a day." (Participant 9)

Some participants exaggerated or misinterpreted the effects of smoking cessation as harmful to health.

"*I stopped for a few months then I became frightened. My friends said once stopped, disease will come. Also, I saw my friend (who) died after stopping (smoking).*" *(Participant 11)*

"*There are side effects when stop smoking, after I stopped smoking, I was diagnosed with high blood pressure and had a heart attack as well." (Participant 28)*

One participant who believed that second-hand smoke was more harmful than smoking itself.

"If I breathe in second hand smoke, it is more poisonous than if I smoke myself." (Participant 1)

It was interesting to also highlight the belief that smoking might in fact, be therapeutic.

"*I had that disease (Idiopathic thrombocytopenic purpura) for a long period, I did not know. ..... I suffered from bleeding gum when I brushed my teeth, sometimes it happened spontaneously. So I resumed smoking. Once I started (smoking)… the gum bleed stopped. .....smoking is good.*" (Participant 33)

One participant commented that hand-rolled tobacco leaves were less hazardous than commercial cigarettes.

"People said "rokok daun" (tobacco leaves) is better when compare to a cigarette. I cannot "tahan" (stand) without smoking…, so, after discharged from the hospital, my friend recommended "rokok daun"(tobacco leaves) to me. The smell is there…I tried it and I continue to smoke……..At least, this "rokok daun" is better, and I managed to stop the cigarettes." (Participant 49)

Interestingly, there were participants who developed defense mechanisms themselves to ward off the concept that smoking is dangerous/unacceptable. This was particularly true when the participants felt obliged to refrain from smoking in the presence of young children or other family members.

"*Sometimes I smoke alone in my own room. But, I, err, I open the windows. My room has air-conditioner but I don't even turn it on……. "I turn on the fan to blow away all the smoke.*" (Participant 6)

Theme 5: Failed assisted smoking cessation

Some participants tried conventional methods (smoking cessation clinics, nicotine replacement therapy) as well as alternative methods such as electronic cigarettes in their attempts to quit smoking. Most participants expressed that pharmacotherapy was ineffective. This perhaps resulted in a negative impression towards the effectiveness of assisted smoking cessation. .

"Smoking cessation clinic does not work. I tried chewing the gum, no use. Not working at all. Whatever medications they gave to stop smoking did not work." (Participant 16)

"I already bought the type of cigarettes, that "blocked", I am not sure if you have heard that before. The one with 3 cigarettes that is like when you smoke, it has no taste. May be you can quit, but I cannot. I brought from the pharmacy." (Participant 18)

Non pharmacological factors also contributed to the dropout from smoking cessation clinics. These included the accessibility of the clinic and the language spoken. Language barriers were highlighted because of multiple languages spoken in Malaysia.

"I have been to smoking cessation clinic two times. It is just too troublesome to keep going there." (Participant 27)

"But I have gone there (stop smoking clinic). They were all Malay and my Malay is not very (good)…. I did not really understand." (Participant 1)

Some participants also noted that they did not know the methods available to quit smoking even though they were willing to try them. Participants implied that their medical practitioners did not convey nor educate them in the methods available to help them to quit smoking.

"Doctors don't teach how to stop. And also nobody help you to stop. Do you think so? So, you don't know the way to stop." (Participant 24)

A descriptive model from grounded theory

Figure 1 presents a descriptive model showing the relationship amongst the five grounded theory themes of participants' perceived reasons for failed quit smoking attempts. Notes accompanying the diagram in figure 1 provided examples of each grounded theory theme.

Insert figure 1 here

The five themes are displayed as five concentric circles to show the relationship of the themes to one another. Theme 1 (Lifestyle & Social Factors) describes the participants perceived the need to "avoid presence of smokers, easy access to cigarettes, impaired self-control, and boredom" in order to avoid nicotine addiction (theme 2). Theme 3 (Social & Cultural Norms) which includes "offering and accepting cigarettes as token of friendship" have had great relapse consequences on abstinent smokers. Theme 4 (Misconception) relates smokers' lived experiences on why they continue to smoke. Some smokers perceive smoking as a "game of the mind" and they can quit anytime they wish to do so; others continue to smoke because of the misconception that stopping smoking will be harmful to health. Theme 5 (Failed Assisted Smoking Method) describes failures in the healthcare delivery system as perceived by smokers. Participants interviewed in this study had negative experiences of the smoking cessation services received, such as "limited accessibility", "language barrier" and "Do not know how the methods work"

Time frames for overcoming barriers to smoking cessation

In this grounded theory study, we created a model of 5 themes of smoking abstinence barriers. Two were potentially surmountable in the short term (less than 3 months) and three were potentially surmountable in the long term (12 months or longer) time frames. (Figure 1)

DISCUSSION

Smoking cessation is a challenging human process for both patients and doctor alike. Despite many decades of trying, we are struggling to make a significant improvement in cessation rates. A 2014 systematic review of qualitative and quantitative literature by Twyman et al[22] on six vulnerable groups (low socioeconomic; indigenous; mental illness; homeless; prisoners and at risk youths) described three common cessation barriers. These were: smoking for stress management, lack of social support from health and other service providers, and a high prevalence and acceptance of smoking in vulnerable communities.

Our study adds to what is known from Twyman et al's[22] review. New areas are covered namely; our participants were community based. Demographically, the mean age group (SD) was 58 (10.8); our participants comprises the 3 major races in Malaysia, with diverse cultural backgrounds. In addition, the uniqueness of the grounded theory method used in this study was that it produced the results on the lived experience of barriers to smoking cessation, which then formed the theory that explained the barriers to smoking cessation.

In Twyman et al's study, the duration of "short term" and "medium and long term" in the smoking cessation strategies was not defined. We have defined the time frames based on current literature namely, for short term as less than 3 months[15, 16], and long term as 12 months or longer in smoking cessation strategies.[17, 18] The two studies agree on lifestyle and individual factors as short- term abstinence strategies, and similarly on cultural factors as long term abstinence strategies. Misconception as a theme was not identified in Twyman et al's paper. We have classified this newly discovered theme as one that requires long term strategy because the patients who made the remarks were in the pre-contemplative stage of change namely, smoking cessation "as a game of the mind" and stopping smoking as harmful to health.

There are several conclusions to be taken from this study:

a) Theme 3: Offering cigarettes to one another is perceived as a sign of friendship and this cigarette culture serves as an impediment to smoking cessation in this society. In China, offering cigarettes is a sign of mutual respect during social events.[23,24] It is customary for a subordinate to light a cigarette for his seniors.[24] Smokers in our community will need to be taught methods of rejecting the offer of cigarettes and reassurance that declining an offer of a cigarette is not seen to be rude.

b)Theme 3: Smokers find it easier to stop smoking during Ramadan due to the religion, cultural and environmental influences.[25] Although many Muslim smokers (97.7%[26]) in Malaysia smoke fewer cigarettes during Ramadan, only 15 % perceive Ramadan as a strong motivator to quit smoking[27] and therefore most relapse after Ramadan. It is also known that such smoking behaviour changes during Ramadan is associated with those of higher incomes, high nicotine dependence and those who are not aware that smoking is 'haram'(forbidden).[25] Ramadan should be seen as an excellent opportunity for the implementation of a religious-competent intervention to improve cessation rates.

c)Theme 4: Our participants revealed a number of misconceptions which were considered to be different from those listed in the literature.[28] For example, misinformation and misconceptions led them to believe that reduction in tobacco consumption is acceptable, but if they were to quit smoking entirely, it will cause disease. Second hand smoking is perceived to be more harmful than active smoking, and therefore they believe that in a smoking environment, active smoking is encouraged. In addition, false beliefs that smoking may be therapeutic or smoking with the fan on or hand-rolled cigarettes are less hazardous is present in this community. Therefore, clinicians should first assess and dispel the relevant false beliefs during counseling sessions.

d) Theme 1 and Theme 2 interactively: To healthcare practitioners, tobacco smoking is regarded as an addiction. However, to patients, it is regarded as self-determined lifestyle choice.[29] Such discrepancy was observed in this study. It has long been established that nicotine addiction is the biggest cause of failure in smoking cessation. Nicotine can be as addictive as heroin, cocaine, or alcohol[30, 31] and as a result, attempts to quit smoking are often unsuccessful because of withdrawal symptoms including stress, and weight gain.[32] Nevertheless, our participants did not perceive addiction as the major factor of failure, instead they expressed overwhelmingly that quitting smoking is a "game of the mind." Smokers blamed themselves as having poor determination in that stop smoking is a matter of how they control their mind. This finding is consistent with that of a recent quantitative study[33] which showed that most smokers believe willpower is necessary or sufficient for quitting. Such belief in mind control as the tool to quit smoking undermines the use of formal cessation assistance. The failure to recognise symptoms of addiction of smoking renders smokers to "not believe" in the usefulness of pharmacotherapy.[34] The use of smoking cessation strategies in our setting has been low[35] and we believe such misconceptions contribute greatly to the failure of smoking cessation. Participants were reluctant to receive professional help and preferred to "quit" by

themselves. A national survey in 2016 in Malaysia revealed that nearly 80% of former smokers quit without any professional intervention.[35] More work is needed to help smokers to accept that cigarette smoking is highly addictive and that nicotine addiction is very powerful. In addition, health care practitioners need to ensure sufficient patient knowledge to improve their confidence to acknowledge withdrawal symptoms and to focus more on the end result during the cessation process.

Limitations

The main limitation of this study is that only in-depth interviews and no focus group interviews were conducted. We did not organize any focus group interviews because the participants were too shy to speak in a group. While the opportunity to observe the interaction among the participants was lost, we managed to gain a more in-depth, detailed account of smokers' experience without them feeling inhibited to speak in a group.

Another possible limitation is selection bias. The highest education grade completed by the majority (70.1%) of the participants was either primary school or lower secondary education and this could have resulted a "less-educated-population". Nonetheless, we think the data obtained in our study is sufficiently robust to describe reasons contributing to failures in smoking cessation in this community.

Implications and Recommendations

We have provided suggestions for applications based on the grounded theory findings in the discussion above. We can use similar grounded theory design to explore theme 2 and theme 5 with the view of defining the extent of ignorance in the symptoms of nicotine addiction; misconceptions; and patient concerns on service provision deficiencies and lack of user-friendliness.

In addition, the themes of this model serve as a checklist for clinicians when exploring barriers to smoking cessation. In particular, in step 4 of both the 5A[10] (assist) techniques and 5R[10] (Roadblock) technique of brief intervention for smoking cessation so that appropriate action plan can be tailored accordingly. With all these efforts, hopefully, we could reach better smoking cessation rates.

CONCLUSION

Five themes of specific beliefs and practices prevented smokers from quitting. Clinicians need to work on these identified categories to help patients overcome barriers to smoking cessation guided by the time frames recommended by the authors. This study highlighted the importance of socio-cultural

environment and misconception as factors contributing to the failure to quit smoking in this community. Educating smokers to dispel their misbeliefs is crucial. Development of religiously and culturally-competent intervention should be considered to reduce relapse rate.

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Authors Contribution

KYC conceived the idea. KYC and LGG contributed to the design of the study. KYC, KWL, CCT, XLC, KCT and STO conducted the individual focus interview, translated and transcribed independently. KYC, KWL, CCT, XLC, KYC, STO carried out thematic analysis as a group and drafted the original manuscript. KYC and LGG critically revised the manuscript. All authors provided approval of the final manuscript.

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Figure legends

Figure 1. A Grounded theory of barriers to smoking cessation

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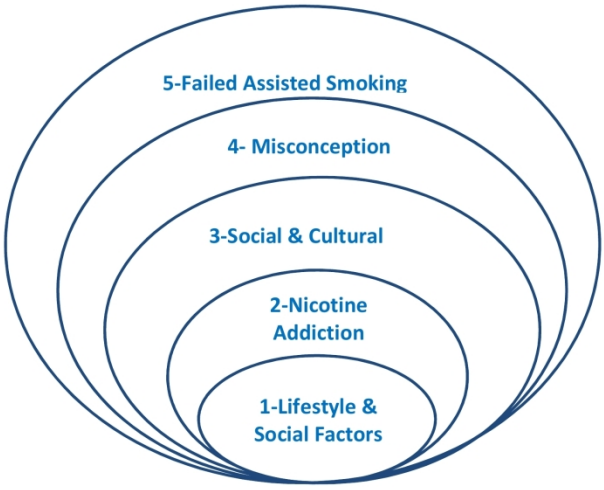

Five themes form the grounded theory of barriers to smoking cessation.
Theme 5-**Failed Assisted Smoking Cessation** e.g. limited accessibility, language barrier, and "Do not know how the methods work".
Theme 4-**Misconception** e.g. "smoking cessation is a game of mind", "stop smoking is harmful to health", and perceives smoking as therapeutic.
Theme 3-**Social & Cultural Norms** e.g. social culture of offering and accepting cigarettes as token of friendship.
Theme 2-**Nicotine Addiction** e.g. physical symptoms of withdrawal; or feeling the need to ask for a cigarette from other smokers.
Theme 1-**Lifestyle & Social factors** e.g. inability to resist temptation I the presence of smokers, easy access to cigarettes, impaired self-control, and boredom.
KEY: Theme 1 & 2 are correctable with short- term strategy (less than 3 months). Theme 3, 4 & 5 are correctable with long- term strategy (12 months or longer).

Figure 1. A Grounded theory of barriers to smoking cessation

215x279mm (300 x 300 DPI)

COREQ (COnsolidated criteria for REporting Qualitative research) Checklist

A checklist of items that should be included in reports of qualitative research. You must report the page number in your manuscript where you consider each of the items listed in this checklist. If you have not included this information, either revise your manuscript accordingly before submitting or note N/A.

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 1: Research team and reflexivity			
Personal characteristics			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	6
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	6
Occupation	3	What was their occupation at the time of the study?	6
Gender	4	Was the researcher male or female?	6
Experience and training	5	What experience or training did the researcher have?	6
Relationship with participants			
Relationship established	6	Was a relationship established prior to study commencement?	6
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	6
Interviewer characteristics	8	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	6
Domain 2: Study design			
Theoretical framework			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	6,7
Participant selection			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	5
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	5
Sample size	12	How many participants were in the study?	6
Non-participation	13	How many people refused to participate or dropped out? Reasons?	5
Setting			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	5
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	6
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	table 2 p7
Data collection			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	table 1 p 6
Repeat interviews	18	Were repeat inter views carried out? If yes, how many?	no
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	6
Field notes	20	Were field notes made during and/or after the inter view or focus group?	no
Duration	21	What was the duration of the inter views or focus group?	6
Data saturation	22	Was data saturation discussed?	5
Transcripts returned	23	Were transcripts returned to participants for comment and/or	6

Topic	Item No.	Guide Questions/Description	Reported on Page No.
		correction?	
Domain 3: analysis and findings			
Data analysis			
Number of data coders	24	How many data coders coded the data?	6
Description of the coding tree	25	Did authors provide a description of the coding tree?	no
Derivation of themes	26	Were themes identified in advance or derived from the data?	7
Software	27	What software, if applicable, was used to manage the data?	7
Participant checking	28	Did participants provide feedback on the findings?	no
Reporting			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	8-14
Data and findings consistent	30	Was there consistency between the data presented and the findings?	8-14
Clarity of major themes	31	Were major themes clearly presented in the findings?	8-14
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	8-14

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

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