

# Explaining the determinants of cessation or reduction of hookah (waterpipe) consumption among southern Iranian women: A qualitative study

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## Research article

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# Abstract

**Background:** The consumption of hookah is rising around the world, especially among women, due to social acceptance and a positive attitude. It is also necessary and inevitable to identify the factors that lead to a decrease in this upward trend. The present study aims to explain the determinants of cessation or reduction of hookah consumption among southern Iranian women in Bandar Abbas. **Method:** This qualitative study was carried out with a content analysis approach, between 2018 and 2019. In total, 36 in-depth, semi-structured interviews were conducted with experienced individuals (15 women with successful cessation, 21 women with unsuccessful cessation) with maximum variation in age, education, and occupation, from different geographical areas of the city. Thematic analysis was used for data analysis, and MAXqda software version 10 was used for data management. **Results:** In total, six main categories were extracted, including incentive backgrounds, the need for liberation, control of external stimuli, religious norms, self-efficacy, and political factors. **Conclusions:** The results showed that many external facilitators affect the decision to quit or reduce the use of hookah. Providing the necessary conditions and factors to increase the encouraging factors and perceived threats, spiritual support and high self-efficacy can be effective in the successful cessation or reduction of hookah consumption. **Keywords:** Hookah, Smoking cessation, Qualitative research, Smoking, Southern Iran, Woman

## Background

The use of hookah is increasing worldwide. A systematic overview of 129 studies in 68 countries (1) found that, the rate of hookah consumption among Eastern Mediterranean adult population ranges from 2.5% to 37.2%, in European adults ranges from 22.7% to 202%, and in the adults of United States ranges from 1% to 11.4%. Most of these studies have shown an increase in rate of hookah consumption between 2009 and 2016, with an annual increase of between 0.4% and 2.9% in the Eastern Mediterranean and 0.3% to 1% in European regions <sup>1</sup>. Other studies show that the use of hookah among women is also increasing, because according to women's perceptions the social acceptance of hookah is higher than cigarette <sup>2</sup>. and women have a more positive attitude toward hookah than men<sup>3,4</sup>. Worldwide statistics show an increase in hookah consumption in women compared to men <sup>5-7</sup>.

Iran is one of the hookah consuming countries, and because of its social acceptance, the availability of flavored tobaccos, and its relatively low cost, it is close to world-wide statistics <sup>8</sup>. In Iran, the prevalence of hookah smoking was reported in a study to be 17%, among women and 6.2% ,among men <sup>9</sup>. The results of a widespread survey conducted in 2007 showed that, among different tobacco products (hookah, pip, and cigarette), more than half of tobacco-smoking women (1.9% from overall 3.2%) smoked hookah so that, the use of hookah among Iranian women has become very popular<sup>10</sup>. In an epidemiological study, the prevalence of hookah smoking among Iranian women was estimated (16.8%) in Sistan, (14.8%) in Bushehr and (10.3%) in Hormozgan<sup>11</sup>., which shows a 2-3-fold increase in the use of hookah among Iranian women compared to This amount Was Reported 8.7% in Eastern Mediterranean Women <sup>12</sup>. 4% in Lebanese women <sup>13</sup>, and 4% in Pakistani women <sup>14</sup>.

Hookah is not a safe alternative to cigarettes. Research suggests that hookah's complications are equal or even worse than cigarettes<sup>15,16</sup>. For example, indoor smoking of hookah is dangerous, and this is while hookah is often smoked in cafes, enclosed spaces and private homes. Moreover, the hookah users share a hookah, which causes the spread of diseases such as tuberculosis, herpes and hepatitis. In addition, hookah consumption can be related to the consumption of other substances, including alcohol and marijuana<sup>17,18</sup>. Nevertheless, both consumers and non-smokers believe that hookah smoke is less harmful than cigarette smoke<sup>19,20</sup>. Some systematic and meta-analysis studies show the association of diseases caused by cigarette smoking (such as leukemia, gastric cancer, lung cancer, oral cancer, cardiovascular diseases, respiratory diseases, and low birth weight) with hookah smoking<sup>1,21</sup>. The study by Alberg et al indicated that women had a high incidence of lung cancer compared to men due to exposure to cancerous substances in tobacco smoke<sup>22</sup>. Pascale et al, in a study also showed that, the effect of hookah in women is higher than in men<sup>4</sup>. Hookah consumption in women is associated with increased risk of early menopause, decreased bone density, infertility, ectopic pregnancy, increased infant mortality and morbidity, intrauterine growth restriction, and increased chromosomal abnormalities<sup>23,24</sup>.

## Methods

This study was carried out using a qualitative content analysis approach. In the present study, the researcher only used individual interview because, according to several interviews conducted as a pilot in order to evaluate the questions, the majority of women wanted to provide information in a private setting. Therefore, the focus group method was not used in this study and the data were collected by face-to-face interviews.

### Participants and recruitment

In total, 36 participants, 15 successful female quitters and 21 unsuccessful female quitters, participated in this study. The criteria for entering the study included: 1) passing of more than 6 months from successful hookah cessation, or having the history of failure in hookah cessation attempt, and 2) not using other tobacco products than hookah, being the native of Bandar Abbas, and having the ability to communicate and the desire to express personal information. The exit criteria included the interviewee's reluctance to continue the interview and the poor quality of interviewee's information regarding the study subject.

After designing the initial question guide, its validity was reviewed by five experts familiar with the qualitative research methodology. This guide included two parts: 1) demographic information, including interview place, interview date, age, marital status, employment status, education level, place of residence, duration of hookah use, and history and duration of successful / unsuccessful smoking cessation; 2) the obvious and hidden reasons for quitting or reducing the use of hookah from the perspective of experienced women.

First, participants completed the demographic questions, and then the interview started with the general questions and with the advancement of the interview and analysis of data at the same time, the questions became more detailed with every following interview. Purposeful sampling with snowball technique was conducted taking into account the maximum variation in characteristics such as age, occupation, education and geographical place of the city such as beach, coffee shops, homes, comprehensive health centers, hospitals and campus. The sampling was continued until data saturation, when no new data was obtained from the interviews. To ensure there would be no more codes added, 5 interviews were made recurrently. The duration of interviews was between 45 and 80 minutes.

## **Methodological Considerations**

The researcher tried to strengthen the credibility of the findings in the three ways mentioned below. 1) Allocating sufficient time to data collection (July 2018- May 2019). 2) The findings were reported back to a sample of participants to be reviewed. After receiving their feedback, no particular changes were in fact made in the data. 3) The data was sent to two colleagues (AH.MG) who were experienced in the qualitative research, and based on their comments, classes and sub-classes were reviewed and revised. To increase the validity of the findings, classes, sub-classes, and examples of the codes were sent to two scholars (sh.sh, YR) who were not part of the research team. After receiving their feedback, we found that some of their opinions and comments contradicted the views of our colleagues. We tried to fix this contradiction by going back to the initial interviews' texts. By describing the context of the study, a complete description of the participants' characteristics, the method of data collection and analysis in systematic steps with an example of the participants' statements, and a clear description of the barriers and limitations, we have tried to facilitate the transferability of the results.

## **Analysis**

All interviews were audio-taped and transcribed verbatim with participants' permission and then coded through conventional content analysis method by SD. The interviews were reviewed independently by SD and TA line-by-line with an open coding approach to identify the overt and covert concepts in the comments of participants. With the advancement of the analysis process and the repeated study of the extracted codes and classes, the similarities and differences between them were distinguished and the classes were separated from each other according to their characteristics and dimensions. Finally, through the constant comparison of the classes, sub-categories were formed and some of them were integrated with each other and the main categories were extracted. The SD and TA reviewed all the extracted codes in several meetings, and discussed and examined the extracted categories and sub-categories. They had an agreement about the majority of categories and sub-categories and there were only a few cases where their views were contradictory. They tried to solve this problem by referring to the initial interviews and reviewing the codes. The extracted codes were managed through MAXQDA software version 10.

## **Ethical Consideration**

This study is approved by the Ethics Committee of Hormozgan University of Medical Sciences with the code: IR.HUMS.REC.2018.249. Before conducting the interviews, the interviewer tried to make an appropriate relationship with the interviewees by giving an introduction about herself, her education, the purpose of the research, the confidentiality of participants' names and the recorded conversations, the reason for selection of the interviewee, and the reason for obtaining informed consent from the interviewee and the recording of their voices.

## Results

### The participants' characteristics

Of the 47 women invited to be interviewed, 36 agreed to participate in the study and 11 refused to participate in the study because of their disagreement with the recording of their voices and their opposition of their spouses. The participants aged between 15 and 67 years with an average age of  $40 \pm 16.20$  years and had a history of hookah consumption between 6 months and 46 years. Other information can be seen in )Table 1(.

Initially, 494 codes were extracted. When they were compared and those alike were omitted or integrated, they finally made 271 codes, 16 sub-categories and 6 categories.

In total, six main categories were extracted, 1. Incentive backgrounds. 2. The need for liberation. 3. Control of external stimuli 4. Religious norms. 5. Self-efficacy 6. Political factors. Since there was a high volume of data in this study, addressing all categories were not possible in a single study, so only four categories were discussed in this paper. The other two categories (Control of external stimuli and Political factors) will be discussed in another paper.

The quotes were described based on the age and type of cessation (successful, unsuccessful) and the duration of cessation.

### Category 1: Incentive backgrounds

This category was one of the broadest and most important categories in cessation/reduction of hookah consumption, which included several sub-categories, such as the existence and advice of influential people, family support, meeting psychosocial needs, and increasing knowledge. Each of these subcategories was supported below by the quotes of the participants:

#### 1.1-Existence and advice of influential people

Most of the women with successful and unsuccessful quitting attempts referred to the advice of their loved ones that played an important role in reducing or quitting the consumption of hookah. The women had a high incentive to follow the wishes of their loved ones. One participant in this regard stated:

*"I stopped hookah smoking for 8 years because my mom asked me to do so. She said she is very upset because of my hookah smoking. I stopped it just because of my mother's request; when someone is dear to you and you have respect for him/her, you listen to him/her and stop smoking." (37 year old, unsuccessful cessation, 8 years)*

## 2.1-Family support

Family support was another sub-category that most women referred to as a contributing factor in reducing and quitting hookah. Emotional communication among family members, proper care and supervision of the family, and spouse's support also persuaded the women to reduce or quit hookah.

*"When my husband realized that I was smoking hookah, he encouraged me to quit. He was very supportive, and bought me a prize and a gift and was very careful about my smoking. This support and care of my husband helped me to set it aside for a year now." (30 years, unsuccessful cessation, 1 year)*

## 1.3- Meeting psychological and social needs

Another sub-category that the participants expressed as motivational factors in reducing and quitting smoking was meeting psychosocial and social needs. Good economic status, high self-esteem, alternative amusements, and awareness about the harms of hookah were among the incentive factors in reducing and quitting the hookah.

According to the participants, having peace of mind and calmness that comes from good economic status can play an important role in reducing and quitting the hookah. They point out that, in families with good income, there is a possibility of healthy recreational activities, children's education and healthy leisure times.

*"When a person has a good income, he can go on a journey and have good fun. He can go to the university if he is young. He does not need to sit at home and think about money anymore and then, to calm himself down, start to smoke hookah." (56 years old, successful cessation for 15 years)*

The existence of alternative amusements was another factor abundantly referred to by women with unsuccessful cessation attempt. According to them, if women are busy working outside the home, their likelihood of being interested in hookah is very weak, or if they are users, they are more likely to quit or reduce. In the present study, women pointed out that, although they have not quit hookah yet, after finding a desired job, their number of hookah smoking sessions was significantly reduced. In some women, hobby and amusement were able to help them to stop hookah smoking successfully. The majority of women, with unsuccessful cessation, have pointed to the role of alternative amusement (education, work, sports) as one of the most important factors in the temporary cessation of hookah.

*"Something that really helped me to quit hookah was my sewing hobby at my own manufacturing workshop. I was working at the offices constantly, and I had little time to sit down. Work is really*

*important, and I did not have time to smoke hookah with my friend." (67 years old, successful cessation, 4 years old)*

High self-esteem was another effective factor in quitting or reducing the hookah smoking. Most women with a history of successful cessation referred to the role of high self-esteem in helping to quit hookah. They believe that people who love and value themselves do not harm their bodies, because they have come to the conclusion that their health and body are very valuable. Most of them pointed to the value of their health. This is why, women with unsuccessful cessation attempts often failed to consider their health as one of the reasons for re-use of hookah.

*"Although I still have some illnesses and I'm recovering, the thought does not come to me that I am sick and I am going to die soon, so let's smoke hookah. I never think that way again, because I love myself now and I do not want to harm my own body. Our body is God's trust in our hands, so we must take care of it." (50 years old, successful cessation, 8 months)*

Awareness about the harms of hookah was one of the factors that encouraged people to quit or reduce the consumption of hookah. Most women with successful cessation pointed out that, they were not fully aware of the precise complications of hookah at the time of consumption. They said that there is not much information available in this regard, and that is why they did not know about the complications of hookah until they have seen their effects on their body. They acknowledged that some consumers are unaware of hookah's disadvantages, and if they would be fully aware, they would probably replace the hookah with a useful and healthy activity.

*"I did not really know about the harms of hookah when I was consuming it. After the night that I was feeling so bad, my friend introduced me to the nicotine sessions. There, I became aware of the hookah's harms, and when I realized it was so damaging, I stopped it." (56 years old, successful cessation, 15 years)*

## **Category 2: The need for liberation**

Another main category that emerged from this research was the need for liberation, which consisted of two sub-categories of perceived risk and being tired of present situation, which were supported by the following participants' quotes:

### **2.1 Perceived risk**

The majority of participants with successful cessation, especially women over 50 years of age, after touching on and observing the dangers of hookahs, including fear of death, frequent hospital admissions, chronic illnesses, endangering children's health, premature death and child neglect, being a bad role-model for children and seeing the signs of aging on the face, decided to quit hookah. Also, most women with unsuccessful cessation, have stopped hookah for a short time due to physical problems (respiratory problems, physician's advice, pregnancy), and after healing, they began to smoke hookah again.

*"I developed a heart problem, my cardiac veins were closed and after three angiographies they were opened. I have a stent in my heart now and I'm afraid my heart will be closed again. I'm afraid of being hospitalized in the hospital, where they cut you open, so I'm not smoking again." (60 years old, successful cessation, 6 years)*

## 2.2-Being tired of the current situation

The participants in the present research referred to the low quality of tobacco flavors, sense of conflicting harm to others, numerous cessation attempts, financial losses, fear of conflicting harm to family livelihood, economic problems and inability to buy flavored tobacco, taking immoral and antisocial behaviors such as deceiving and lying to get flavored tobacco, impossibility of taking hookah to parties and trips, as the reasons for their hookah cessation. These factors had caused women to be tired and worried about their hookah smoking behaviors.

*"I was completely fed-up, and the flavors were lousy and bitter. I was going to my neighbors' house for smoking. I was really tired lately, so I decided to stop." (61 years old, successful cessation, 7 years)*

## Category 3: Religious norms

Another important factor contributing to the cessation and reduction of hookah smoking was religious norms. The participants believed that strong belief in God and relying on Imams helped them in successful quitting of the hookah. The majority of women contributed their successful hookah cessation to God's will and help. They stated that, they failed each time they attempted to quit hookah, but by believing in God and asking for his help, they found more power within themselves and were able to successfully quit hookah.

In confirmation of the above statements, a participant with successful cessation (15 years) stated: *"I quitted many times and again I was tempted to smoke, until I went to Hajj and I prayed and begged Allah to help me get away from hookah temptation. I believe in God's and Imams, so when I came back from pilgrimage of the Hajj until now, it is 15 years that I have stooped hookah smoking. I am sure without God's help I would have been tempted again."*

## Category 4: Self-efficacy

Another major category that emerged from data analysis was the self-efficacy. Most participants considered the ability and skills of people in hookah cessation as important. They believe that hookah cessation is done only with confidence in the ability and skills of individuals.. The participants believed that women should be more stubborn and serious in stopping hookah and should believe in their abilities.

*"You must be willing to quit hookah, otherwise nothing and nobody can force you to quit it. You must first trust yourself that you can do it. I saw my friend smoking hookah for a long time, but she could quit it, so I told myself I can quit it too. I have the ability to do it. The first and second days were hard, but I did it thanks to God." (43 years old, successful cessation, 7 months)*

## Discussion

The present study is the first study that identified the determinants of cessation or reduction of hookah consumption with a qualitative approach. It is clear that identifying and reporting of the determinants of cessation or reduction of hookah consumption can help to design effective prevention and intervention programs in this area.

In the present study, four categories were discussed and analyzed: incentive backgrounds, the need for liberation, religious norms and self-efficacy in cessation or reduction of hookah smoking.

### Incentive backgrounds

As shown by the results, the advice of loved ones had led to the quitting of women. It seems that, these loved ones have succeeded in creating a motive in the participants for quitting hookah. Also, most women who have had long periods of unsuccessful quitting attempt, pointed to the advice of mother and spouse to quit hookah. In this regard, a study reported the advice of others as one of the most important factors in smoking cessation<sup>26</sup>. Perhaps one can claim that, one of the important factors that can persuade people to stop hookah is to create strong motivation in them by the advice of their loved ones. This would probably be the cheapest way to help quit smoking. A study found that, those who are motivated to stop smoking are four times more likely to quit it than those with low motivation<sup>27</sup>. The above points somehow reflect the incentive structure, which is one of the structures of the Theory of Planned Behavior<sup>28</sup>. The motivation to follow is a degree, by which a person demands action in accordance with the perceived desires of the most important individuals in his/her life. In confirmation of the above statements, a study showed that for students, the family's opinion was of great importance in quitting of hookah<sup>29</sup>. In another study, the association between the motivation to comply and smoking cessation was proved<sup>30</sup>. Therefore, the use of this strategy (targeting important and influential people in women's lives) and persuading the women by these people can have a significant effect on their hookah cessation. In order to intervene effectively in this area, a discussion can be arranged to help the participants believe that, quitting hookah is important for their loved ones. Another effective intervention could be to identify the most important individuals in the women's life and educating them and asking them to encourage the women to quit hookah smoking. This method can be an effective step in the cessation of hookah successfully.

**Care and support of the family** (parent and spouse) was another factor in encouraging women to quit or reduce the use of hookah. Perhaps one can argue that, family support and care is, in some way, an expression of the concept of social protection, which is one of the main theoretical concepts used in smoking cessation in families<sup>31</sup>. The family's supportive or unsupportive behavior has a significant affect on the individual's intention to desire or quit smoking<sup>32</sup>. In this regard, many studies have considered the family support in smoking cessation as a major contributor<sup>32,33</sup>. It seems that, social support can play a vital role in smoking cessation. In explaining this finding, it can be said that, in cases where an individual faces difficulty or stress, the social support of the people in an informal setting can

help the person in coping with the problems and stresses, and as a result, the person would be able to manage his or her stress and problems. Therefore, promotion of close relationship between family members, helping family members and the individual to get acquainted with new support groups, and connecting people to support groups are recommended.

Meeting the psychosocial needs such as good economic status, high self-esteem, alternative amusements, and raising awareness about the harms of hookah play important role in a person's decision to quit or reduce hookah smoking.

Most participants considered good economic status to be effective in helping to quit or reduce the use of hookah. Studies have highlighted the high economic status as one of the most important predictors of tobacco cessation<sup>34</sup>. Another study showed that smoking cessation is more successful in women with higher economic status<sup>35</sup>. It may be argued that economic deprivation, by increasing emotional stress, is an important factor in reducing the incentive towards quitting of hookah. In other words, economic deprivation can be an obstacle to the successful cessation of hookah. It could be argued that, people with a good economic status have a better chance of healthy activities than people with lower economic status. This calls for the efforts of the country's governors to make economic security more accessible and expand healthy and cheap recreational activities for all citizens.

The results of this study showed that high self-esteem was one of the most effective factors in quitting or reducing the use of hookah. In explaining this finding, we can say that people with higher self-esteem are more likely to be respectful of their valuable health. On the other hand, low self-esteem may well create a ground for committing high-risk behaviors, such as the use of hookah. Studies have confirmed the impact of low self-esteem on tobacco use<sup>36,37</sup>.

Women's amusement was another factor that encouraged them to quit or reduce the use of hookah. In this regard, a study has shown that unemployment reduces the chances of smoking cessation, and contrary, engagement in a professional job can increase the chances of smoking cessation<sup>38</sup>. In explaining this finding, we can argue that people who are unemployed are more likely to experience more free time, so they are more likely to go to hookah houses to spend time. Perhaps it can be argued that, these are the psychosocial effects of unemployment, which persuade people to smoke hookah. Also, employed women are less likely and have less time to spend on hookah smoking, as they have to work certain hour of the day and therefore, they have limited leisure time. The provision of financial facilities by banks to develop clothes designing, embroidery, confectionery, etc workshops in neighborhoods can be a very effective step towards reducing the use of hookah among women who use hookah as a type of hobby in the neighborhood.

**Awareness about the harms of hookah** was another factor that encouraged women to quit hookah. In this regard, a study has shown that, the increase in hookah consumption among women is due to the lack of awareness about hookah's harms<sup>39</sup>. Another study showed that pregnant women in their second pregnancy showed a greater tendency to quit smoking than nulliparous women, as they were more aware

about the harms of hookah<sup>40</sup>. It can be said that, raising awareness about the harmful consequences of hookah consumption or the beneficial effects of hookah cessation can facilitate hookah cessation. Perhaps people think that, the harmful effects of hookah are less than cigarettes or hookah has no harmful effect at all, so they prefer hookah. It could also be argued that, knowing about the harmful effects of hookah can negatively affect the person's attitude towards hookah, which can be an important factor in smoking cessation. It seems that, proper and comprehensive information sharing practices have not been used in this field. In the meantime, sharing information through online social networks is very helpful in raising the awareness of people, as it is cheaper, has wider range and is time and placeless. However, training IT specialists to prepare the educational contents and upload them in these networks should not be forgotten. Also, sharing information through collective media and health and treatment centers can be another effective step in this regard.

Other strategies for raising the awareness of people about the harms of hookah smoke include; effective learning through questioning and answering, the use of cue to action in coffee shops and places that serve hookah with warning messages about the hookah's harm, and the display of posters and teasers in places with high level of commuting.

Most participants with successful cessation, in particular older women, managed to stop smoking hookah by learning about the complications of hookah. It can be argued that those who understand the harmful effects of hookah are more likely to have stronger motive to stop it. In this regard, it can be said that hookah consuming women have experienced more physical problems at older age, which have been complemented with the negative complications of hookah. As a result, health concerns have led to an increase in their motivation to quit hookah. In a study, health concerns were the most important factors in smoking cessation, so that nearly 64.3% of smokers with chronic illnesses have been trying to quit smoking, which almost 21.0% of them successfully quitted<sup>41</sup>. The above mentioned points refer to the construct of perceived severity, which is one of the main constructs of the Health Belief Model<sup>42</sup>. The perceived severity is the individual's mental belief about the degree of harm that can be caused by the use of hookah. Risk perception theories predict that if people will experience a threat, they want to counter that threat. However, how they do so is determined by their coping efficacy level: if efficacy is high, they may change their behaviour in the suggested direction; if efficacy is low, they react defensively<sup>43</sup>. Therefore, in addition to perceived risk, the ability of individuals in dealing with the risk in a proper way should be considered. To increase the perceived severity and motivate people to quit hookah in a way that is tailored to the age of the consumers, designing brochures and stories with positive and negative messages, using threatening educational videos, and designing appropriate messages and reporting the disease-related complications of hookah can be an effective step.

### **The need for liberation**

Getting tired of the current situation was another factor that affected the successful hookah cessation in women. Often the women, after smoking hookah for years and missing the short fun that come from smoking hookah and also making several attempts to quit the hookah, had come to a point where they

were tired of everything and everyone and were filled with hopelessness and despair. Therefore, in such situation, they were looking for a way to escape from these conditions, and the thought of quitting hookah was forming in their mind.

### **Religious norms**

According to the results of present study, religious norms have also played an important role in quitting hookah. The women referred to relying on God and believing in the Imams as an important factor in quitting hookah smoking. A study found that, the majority of people consume less tobacco during religious activities<sup>44</sup>. Another study showed that spiritual support overcomes nicotine dependence<sup>33</sup>. It can be argued that spiritual beliefs can be a facilitator to smoking cessation. In this regard, it can be said that probably people who have strong religious beliefs, as a result of their closeness to God, experience more calmness that results in less anxiety and depression in them, and in situations of psychological pressure, they rely on God and take less high-risk behaviors such as smoking. Tobacco users are also more likely to attempt smoking cessation if they have religious support. It is recommended that, the hookah's harmful complications and the link between Quran's hadith and hookah should be communicated by clergymen in mosques and other religious ceremonies.

### **Self-efficacy**

According to the results of this study, self-efficacy was another factor affecting the cessation of hookah. Self-efficacy is defined as one's belief in own ability to perform a successful behavior and is a vital and influential structure, which has been emphasized on in educational theories<sup>45</sup>. Studies by Tahmasebi et al<sup>46</sup>. and Kim et al<sup>47</sup>. investigated the factors that affect continues consumption of hookah and cigarette using various behavioral theories, showed that self-efficacy was an important factor in predicting smoking cessation, and also it has a significant relationship with nicotine dependency behavior. Therefore, in designing educational programs, the special and practical role of self-efficacy, especially in habitual behaviors such as hookah smoking behavior, should be considered to empower women to quit hookah.

### **Limitations and future research**

There were some limitations in this study. Since the interviews were face-to-face, the participants might have provided responses that were socially acceptable. An experienced interviewer with a high social skills and interviewing in a private environment could have somewhat reduced the risk of socially acceptable responses. Like other qualitative studies, researchers' beliefs might have influenced the process of study from conceptualization to engagement with participants and interpretation of data<sup>48</sup>. However, in this study, the researcher used an exploratory inductive approach and allowed the extraction of classes and sub-classes to be directly derived from the participants' statements. On the other hand, it is possible that the interviewees' views have not covered all the factors affecting the smoking of hookah, so in order to eliminate this limitation the interviews were continued until data saturation. It can also be pointed out that, extracted classes may not be generalizable to populations of other regions. Failure to

compare the results of this study with similar studies due to the lack of related studies was another limitation of the present study. The need for further research to extend the study results to other people with a different cultural and environmental context is suggested. It is also suggested that researchers in future studies investigate the factors affecting the ongoing attempts of hookah cessation and examine the deterrent factors that affect unsuccessful hookah cessation.

## Conclusions

The results of this study indicate that, external facilitators have a significant influence on the decision to stop or reduce the consumption of hookah. Providing conditions that enhance motivation, and increasing perceived threat, spiritual support and self-efficacy can be effective in reducing or quitting hookah successfully.

## Declarations

### **Ethics approval and consent to participate:**

Ethical approval was received for this study from the Ethics Committee of Hormozgan University of Medicine Sciences (IR.HUMS.REC.1397.249). women interviewed provided written consent to participate in the study, only for women under 16 years old , written consent was obtained from their parents .

### **Consent for Publication**

Not applicable

### **Availability of data and material**

Data is available by the corresponding author on reasonable request

### **Competing interests**

The authors declared no conflict of interest

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### **Authors' contributions**

TA conceptualized and designed the project, and obtained research funding. AH and MGH provided feedback on the protocol. SD led analysis of the transcripts, and with TA developed the manuscript. GK, AH, MG and AG performed the critical review. SD and TA responded to the reviewers' comments. All

authors reviewed and approved the final version. SD and TA are the guarantors of the manuscript. SD is the lead author, and TA is the senior author. Other authors are listed in order of contribution

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## References

1. Jawad M, Charide R, Waziry R, Darzi A, Ballout RA, Akl EA. The prevalence and trends of waterpipe tobacco smoking: A systematic review. *PLoS One*. 2018;13(2):e0192191.
2. Baheiraei A, Sighaldehy SS, Ebadi A, Kelishadi R, Majdzadeh R. Factors that contribute in the first hookah smoking trial by women: a qualitative study from Iran. *Iran.j.public Health*. 2015;44(1):100.
3. Eshah NF, Froelicher ES. Knowledge, attitudes, beliefs and patterns of waterpipe use among Jordanian adults who exclusively smoke waterpipes. *Eur J Cardiovasc Nurs*. 2018;17(1):85-92.
4. Salameh P, Khayat G, Waked M. Lower prevalence of cigarette and waterpipe smoking, but a higher risk of waterpipe dependence in Lebanese adult women than in men. *WomenHealth*. 2012;52(2):135-150.
5. Shearston JA, Park SH, Lee L, Oshinsky C, Sherman S, Weitzman M. Increasing hookah use among adolescent females in the US: analyses from the 2011-2014 National Youth Tobacco Survey (NYTS). *Tob. Prev. Cessation* 2016;2(September):74
6. Villanti AC, Cobb CO, Cohn AM, Williams VF, Rath JM. Correlates of hookah use and predictors of hookah trial in US young adults. *Am J Prev Med*. 2015;48(6):742-746.
7. Daou KN, Bou-Orm IR, Adib SM. Factors associated with waterpipe tobacco smoking among Lebanese women. *WomenHealth* 2018:1-11.

8. Alzyoud S, Haddad L, Shahawy OE, et al. Patterns of Waterpipe Use among Arab Immigrants in the USA: A Pilot Study Br J Med Med Res. 2014;4(3):(21-31)
9. Aghamolaei T, Tavafian SS, Zare S. Health related quality of life in elderly people living in Bandar Abbas, Iran: a population-based study. *Acta Med Iran* . 2010;48(3):185-191.
10. Meysamie A, Ghaletaki R, Haghazali M, et al. Pattern of tobacco use among Iranian adult population: results of the national Survey of Risk Factors of Non-Communicable Diseases (SuRFNCD-2007). *Tob Control*. 2009;tc. 2009.030759.
11. Nemati S, Rafei A, Freedman ND, Fotouhi A, Asgary F, Zendehdel K. Cigarette and Water-Pipe Use in Iran: Geographical Distribution and Time Trends among the Adult Population; A Pooled Analysis of National STEPS Surveys, 2006-2009. *Arch Iran Med (AIM)*. 2017;20(5).
12. Azab M, Khabour OF, Alzoubi KH, et al. Exposure of pregnant women to waterpipe and cigarette smoke. *Nicotine Tob Res*. 2012;15(1):231-237.
13. Chaaya M, Jabbour S, El-Roueiheb Z, Chemaitelly H. Knowledge, attitudes, and practices of argileh (water pipe or hubble-bubble) and cigarette smoking among pregnant women in Lebanon. *Addict Behav*. 2004;29(9):1821-1831.
14. Khan MT, Hashmi S, Zaheer S, et al. Burden of waterpipe smoking and chewing tobacco use among women of reproductive age group using data from the 2012–13 Pakistan Demographic and Health Survey. *BMC public health*. 2015;15(1):1113.
15. Sepetdjian E, Abdul Halim R, Salman R, Jaroudi E, Shihadeh A, Saliba NA. Phenolic compounds in particles of mainstream waterpipe smoke. *Nicotine Tob Res*. 2012;15(6):1107-1112.
16. Radwan G, Hecht SS, Carmella SG, Loffredo CA. Tobacco-specific nitrosamine exposures in smokers and nonsmokers exposed to cigarette or waterpipe tobacco smoke. *Nicotine Tob Res*. 2012;15(1):130-138.
17. Grinberg A, Goodwin RD. Prevalence and correlates of hookah use: a nationally representative sample of US adults ages 18–40 years old. *Am J Drug Alcohol Abuse*. 2016;42(5):567-576.
18. Fielder RL, Carey KB, Carey MP. Predictors of initiation of hookah tobacco smoking: A one-year prospective study of first-year college women. *Psychol Addict Behav* 2012;26(4):963.
19. Akl EA, Jawad M, Lam WY, Obeid R, Irani J. Motives, beliefs and attitudes towards waterpipe tobacco smoking: a systematic review. *Harm Reduct J*. 2013;10(1):12.
20. Mojahed K, Navidian A. The effect of motivational interviewing on self-efficacy to quit hookah smoking in pregnant women. *hayat j*. 2018;24(1):84-96.
21. Waziry R, Jawad M, Ballout RA, Al Akel M, Akl EA. The effects of waterpipe tobacco smoking on health outcomes: an updated systematic review and meta-analysis. *Int J Epidemiol*. 2016;46(1):32-43.
22. Alberg AJ, Samet JM. Epidemiology of lung cancer. *Chest*. 2003;123(1):21S-49S.
23. Tansaz M, Adhami S, Mokaberinejad R, Namavar Jahromi B, Atarzadeh F, Jaladat AM. An overview of the causes and symptoms of male infertility from the perspective of traditional persian medicine.

*Iran j obstet Gynecol Infertil.* 2016;18(182):11-17.

24. Sarokhani M, Veisani Y, Mohamadi A, et al. Association between cigarette smoking behavior and infertility in women: a case-control study. *Biomedical Research Therap.* 2017;4(10):1705-1715.
25. Nakkash RT, Khalil J, Afifi RA. The rise in narghile (shisha, hookah) waterpipe tobacco smoking: a qualitative study of perceptions of smokers and non smokers. *BMC public health.* 2011;11(1):315.
26. Shamsipoor.M KBR, Mohammad Pour Asl,A, Mansouri,A. smoking status and factors influencing smoking cessation among students of University of medical sciences,Tabriz,Iran. *J Knowl Health 6 Iranian condress of Epidemiology and public Health.* 2010,july 13- 15 Tuesday. Shahroud University of Medical Sciences, Shahroud, Iran;5.
27. Levshin V, Slepchenko N. Determinants of smoking cessation and abstinence in a Russian smoking-cessation center. *Tob. Prev. Cessation* 2017;3(September):124
28. Ajzen I. The theory of planned behaviour is alive and well, and not ready to retire: a commentary on Sniehotta, Premeau, and Araújo-Soares. *Health Psychol Rev.* 2015;9(2):131-137.
29. Joveyni H, Dehdari T, Gohari Mr, Gharibnavaz H. The survey of attitudes, subjective norms and perceived behavioral control of college students about hookah smoking cessation. *Health Syst Res* 2012 , Volume 8 , Number 7 (SUPPLEMENT); age(s) 1311 To 1321..
30. Bledsoe LK. Smoking cessation: an application of theory of planned behavior to understanding progress through stages of change. *Addict Behav.* 2006;31(7):1271-1276.
31. Westmaas JL, Bontemps-Jones J, Bauer JE. Social support in smoking cessation: reconciling theory and evidence. *Nicotine Tob Res.* 2010;12(7):695-707.
32. Hubbard G, Gorely T, Ozakinci G, Polson R, Forbat L. A systematic review and narrative summary of family-based smoking cessation interventions to help adults quit smoking. *BMC Fam Pract.* 2016;17(1):73.
33. Echer IC, Barreto SSM. Determination and support as successful factors for smoking cessation. *Rev Lat Am Enfermagem.* 2008;16(3):445-451.
34. Van Loon AJM, Tjshuis M, Surtees PG, Ormel J. Determinants of smoking status: cross-sectional data on smoking initiation and cessation. *Eur J Public Health.* 2005;15(3):256-261.
35. Alam MK, Rao MB, Cheng F-C. Sample size determination in logistic regression. *Sankhya B.* 2010;72(1):58-75.
36. Khosravi A, Mohammadpoorasl A, Holakouie-Naieni K, Mahmoodi M, Pouyan AA, Mansournia MA. Causal effect of self-esteem on cigarette smoking stages in adolescents: coarsened exact matching in a longitudinal study. *Osong Public Health Res Perspect.* 2016;7(6):341-345.
37. Saari AJ, Kentala J, Mattila KJ. Weaker self-esteem in adolescence predicts smoking. *Biomed Res Int.* 2015;2015.
38. Waldron I, Lye D. Employment Unemployment, Occupation, and Smoking. *Am J Prev Med.* 1989;5(3):142-149.

39. Saeed Firoozabadi M, Tahmasebi R, Noroozi A. Predicting Factors on Continued Intention of Waterpipe Smoking Among Women in Bushehr Using the Theory of Planned Behavior. *Iran JHealth Educ Health Promot* . 2015;2(4):260-269.
40. Yunis K, Beydoun H, Nakad P, Khogali M, Shatila F, Tamim H. Patterns and predictors of tobacco smoking cessation: a hospital-based study of pregnant women in Lebanon. *Int J Publ Health*. 2007;52(4):223-232.
41. Im PK, McNeill A, Thompson ME, et al. Individual and interpersonal triggers to quit smoking in China: a cross-sectional analysis. *Tobacco control*. 2015: Tob Control -2014-052198.
42. Skinner CS, Tiro, J., & Champion, V. L . *The Health Belief Model*. In K. Glanz, B. K. Rimer & K. Viswanath (Eds.), *Health behavior and health education: Theory, research, and practice*. San Francisco,CA: Jossey-Bass.; 2015.
43. Kok G, Peters G-JY, Kessels LT, Ten Hoor GA, Ruiter RA. Ignoring theory and misinterpreting evidence: the false belief in fear appeals. *Health Psychol Rev*. 2018;12(2):111-125.
44. Sharma MK, Suman L, Manjula M, Marimuthu P, Ahmad M. Exploring the Role of Religion in Smoking Cessation. *Delhi Psych J*,Vol. 14 No.1
45. Bandura A. Self-efficacy: toward a unifying theory of behavioral change. *Psychol Rev*. 1977;84(2):191.
46. Tahmasebi R, Firoozabadi MS, Noroozi A. Assessment of the extended theory of planned behavior for nicotine dependence prediction: An application of path analysis. *Iran Red Crescent Med J*. 2017;19(9):1-7.
47. Kim Y-H. Adolescents' smoking behavior and its relationships with psychological constructs based on transtheoretical model: A cross-sectional survey. *Int J Nurs Stud*. 2006;43(4):439-446.
48. Kuper A, Reeves S, Levinson W. An introduction to reading and appraising qualitative research. *Bmj*. 2008;337(7666):404-407.

## Tables

**Table 1: Demographic Characteristics of Sample**

Variable	Years	( Number, Percentage)
<b>Age of the participant</b>	15-25	9 (25)
	26-35	7(19.4)
	36-45	3(8.3)
	46-55	6(16.7)
	55-65	10(27.8)
	66-75	1(2.8)
<b>Marital status</b>	Single	4(11.1)
	Married	16(44.4)
	Divorced	8(22.2)
	Widowed	8(22.2)
<b>Occupation status</b>	Housekeeper	25(69.4)
	Employed	10(27.8)
	Retired	1(2.8)
<b>Education</b>	Illiterate	8(22.2)
	Primary school	6(16.7)
	High school	5(13.9)
	Diploma	9(25)
	University degree	8(22.2)
<b>Residence</b>	North	11(30.6)
	South	10(27.8)
	West	6(16.7)
	East	4(11.1)
	Center	5(13.9)
<b>Successful cessation</b>	Less than one year	2(13.3)
	1-3 years	4(26/66)
	3-5 years	3(20)
	5-10 years	5(33.33)
	Over 10 years	1(6.66)
<b>Unsuccessful cessation</b>	Less than a month	3(14/28)
	1-3 months	10(47/61)
	3-6 months	7(33.33)
	More than 6 months	1(4.76)



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