Education based on the Trans-Theoretical Model on sexual function of married women in Iran

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ABSTRACT

Objective. This research investigates education based on the trans-theoretical model (TTM) on sexual function of married women in Iran.

Patients and Methods. This study was quasi-experimental. In this study random allocation was not used. This study included 200 Iranian married women - 20 to 50 years old - from 20 health centres in Iran from 2020 to 2021. Using questionnaires, the demographic, trans-theoretical model (TTM) constructs were measured and analysed. Each group met for 60 minutes, twice weekly, for 12 weeks. Six months were set aside for completion of the survey (pre-intervention and post-intervention). The proceeding analyses were conducted using SPSS (version 20) statistical software package.

Results. The average rates of TTM constructs (stages of Change (6.355 ± 1.342), processes of change (8.614 ± 3.406), self-efficacy (22.447 ± 6.783), decisional balance (5.355 ± 2.342) and sexual function (32.37 ± 4.73) in education group was increased meaningfully (P-value < 0.05); these changes were not meaningful in control group (P-value > 0.05).

Conclusions. The findings of this study based on TTM, could be a good guideline for designing interventions in women sex education program, also could be used to prepare stability of women to continue appropriate sex education from return to previous habits. The results of this research suggest that the use of TTM can be used in educational interventions on sexual function of married women in Iran and have useful results.

INTRODUCTION

Sexual function is how the body reacts in different stages of the sexual response cycle.

The aspects of sexual function defined as being relevant to the assessment include sexual desire, erection, orgasm and ejaculation. Desirable sexual function is the factor to strengthen family and the foundation to obtain and stabilize a consistent culture. Possibly, even couples having sexual inad-equacies and they themselves are unaware of its effect on marital life problems and its role in building poor communication, low self-confidence, and depression in themselves and their spouses [1]. In the studies, the most common sexual disorders in women were reported sexual desire disorder (22%-63.3%), sexual arousal disorder (31.6%-43%), orgasmic disorder (34.5%-45.8%), and sexual pain disorder (12.8%-36.8%) [2, 3], vulvovaginal atrophy (75.3%) [4]. Studies estimate that pelvic disorders

(either pelvic organ prolapse, urinary or fecal incontinence) affect 25 % of North American women [5]. The prevalence and severity of pelvic organ prolapse in aging affect the quality of life (QoL) and the sexual function in women [6]. Women with pelvic floor dysfunction complaints had infrequent orgasm, decreased arousal, and increased dyspareunia. In a cohort of relatively older women who attended urogynecology clinics, it was suggested that sexual function is related to the degree of bother from POP regardless of the degree of prolapse [7].

In recent surveys, around 50% of menopausal women reported vulvovaginal atrophy associated symptoms, with a significant impact on sexual function and ultimately on sexual activity [8].

One of men's most frequent sexual disorders is erectile dysfunction, in one study, the overall prevalence of erectile dysfunction in men aged 40-75 years was 52%, and their mild, moderate, and complete erectile dysfunction were 2.17%, 2.25%, and 6.9%, respectively [9]. In one study demonstrated that sexual dysfunction is highly prevalent in infertile women, especially those with secondary infertility, and that the domains of arousal, orgasm, and satisfaction were the aspects of sexual function which were subsequently most impacted [10].

The cited statistics are the reasons for the importance of attention to sexual health since sexual instinct is one of the inherent human needs as Maslow has put it into the categories of physical or basic survival needs [11]. Regarding intercourse can be also said that although happy married life is only somewhat related to intercourse, this relationship may be one of the most significant reasons of happiness or lack of that in marital life [12]. Because if this relationship not to be satisfactory, it will result in deprivation and failure feeling, the lack of safety feeling, jeopardizing mental health, and finally family disintegration. Therefore, sex education programs include issues that have been considered to raise awareness and reduce sexual problems at all social levels [13]. To develop sexual health education program, it is essential to pay attention to particular aspects of culture, religion, laws, norms, and prevailing values in the society and families. Media, the appropriate message and the appropriate message transmitter, is also very important to success of every educational program [14].

Several theories about the role of beliefs and ideas of young women have been proposed. In the meantime, the trans-theoretical model provides a good framework for understanding this [15]. TTM is widely used in different populations for sexual behaviour, physical activity, nutrition [15-17]. TTM is a regular and systematic framework to analyse issues related to the decisions to provide a behaviour, an advantage of TTM is that healthcare practitioners are able to treat individuals while they are in different phases of readiness to make changes in their health behaviours [16].

There are three core sets of constructs that define the trans-theoretical model: the stages of change, the processes of change, and the levels of change. In addition to these constructs, the model theorizes decisional balance and self-efficacy as important constructs for explicating the model. Within the TTM, the stages of change have received the most attention, given the practicality of their application, and utility beyond psychotherapy and addictive behaviors. The stages of change are pre-contemplation (the women are not ready to change their sexual function in the next six months), contemplation (women are ready to change their sexual function in the next six months), preparation (the women are ready to change their sexual function in the next 30 days), action (the women have been effectively changing their sexual function for less than six months), and maintenance (the women have been effectively changing their sexual function for more than six months). Decisional balance relates to the pros and cons (benefits and costs) in the better sexual function [18, 19]. Self-efficacy is defined as a person's belief in his/her abilities to execute the courses of action required for change [20]. The processes include both overt and covert activities. Ten processes were identified as having received the most empirical support, with some processes having received greater attention than others; the processes have been loosely grouped into two categories. The experiential processes tend to reflect a cognitive or affective characteristic, while the behavioural processes are more action-oriented [18].

Objectives

The aim of this study was education based on the trans-theoretical model (TTM) on sexual function of married women in Iran from 2020 to 2021.

MATERIALS AND METHODS

This study was quasi-experimental study. The women in the study were selected among the

health centers in Iran. Women were divided into education and control groups.

Study participants

Between May 2020 and July 2021, women were screened for eligibility. A central city serving medium-income, culturally similar women were the setting for the study. Women ranged in age from 20 to 50 years.

Ethical approval for this study was gained from the research ethics committee at Iran. Before the enrolment, an informed consent was obtained from all of the participants.

Inclusion criteria

1. Women between 20-50 years.
2. No having pregnancy or breast feeding.
3. Having a tendency to participate in the study.
4. Being Iranian.

Exclusion criteria

1. Did not participate because of disease.
2. Did not complete the questionnaire.
3. Consumption of drugs, alcohol.
4. Menopausal women.
5. Women with vulvo vaginal-atrophy.
6. Women with pelvic prolapse.
7. Male or female infertility.

Women completed the measures in a room setting.

Sample size

The sample size was calculated using the formula for quasi-experimental survey [21]. In this study random allocation was not used. With a margin of error = 0.05 and = 10%, an expected power of 90%, a Z value of 1.28. Participants were 200 married women at health centers located in Iran.

$$n = \frac{\left(z_{1-\alpha/2} + z_{1-\beta}\right)^2 (\partial_1^2 + \partial_2^2)}{(\mu_1 - \mu_2)2}$$

Instruments

All questionnaires CVI (Content Validity Index) and CVR (Content Validity Ratio) values were higher than 0.78 and 0.72. Face validity were considered to be suitable with respect to 22 of expert panel members [22].

Stages of behavior change

The TTM consists of five stages of change (pre-contemplation, contemplation, preparation, action, maintenance) representing the temporal, motivational, and consistency of behavior change [23]. The five stages of change regard to the following questions:
1. I have not thought about sexual function (yes – no).
2. I have thought about sexual function (yes – no).
3. I am planning to do so within one month (yes – no).
4. Now it is less than 6 months since I have sexual function (yes – no).
5. Now it is more than 6 months since I have sexual function (yes – no).

The answer yes reveals that the participant is in that stage and the answer no reveals that she is in other stages.

Self–Efficacy

In this research, eight questions were designed. The stem of all questions began with the phrase "How much you are confidence that you can" and included situations like the need to much personal efforts (one question), finding a solution upon facing with obstacles (four questions including, facing with obstacles in general, lack of support from partner). The answers to the questions were designed in the form of 5 optional Likert scale (completely confidences = 5, not confidence at all = 1). The validity of questions was confirmed using expert panel, and the reliability took place, using a pilot test of answering the questions by 20 women who were in conditions similar to the participating in the research.

Decisional balance

The TTM consists of decisional balance construct assesses the perceived barriers (cons) and benefits (pros) associated with the adoption of healthy behavior [23]. Decisional balance was assessed using a questionnaire with 8 questions. The answers to the questions were designed in the form of 5 optional Likert scale (very much = 5, very little = 1).

Processes of change

The questionnaire PCS on sexual function contains 34 items that measure experiential and behavioral processes of change. The internal reliability of the

questionnaires was (α = 0.79-0.94). The items had moderate internal consistency: consciousness raising (0.79), self-liberation (0.79), social liberation (0.89), counter conditioning (0.94), stimulus control (0.88), helping relationship (0.80), dramatic relief (0.85), self-reevaluation (0.88), environmental reevaluation (0.86), and reinforcement management (0.86).

Sexual function

This scale had 19 items, index of sexual functioning for women is a 19-item self-report inventory that measures current levels of sexual functioning and satisfaction in women. The items had high external consistency (r = 0.93).

Educational interventions

Participants were assigned to either the education group or the control group. Within the education group (n = 200), participants in the education group were classified into five groups [pre-contemplation (n = 20), contemplation (n = 20), preparation (n = 20), action (n = 20) and maintenance (n = 20)], and the educational needs of the groups were determined. As the first step (before providing education), the questionnaires were completed by participants.

Each group met for 60 minutes, twice weekly, for 12 weeks. Six months were set aside for completion of the survey (pre-intervention and post-intervention). The curriculum focused on identifying the changing behaviours of stage of change, decisional balance (pros and cons), processes of change, and self-efficacy. There was not educational intervention in control group. Each group completed measures at baseline (six months).

Statistical analysis

All the statistical analyses were carried out using the SPSS statistical software version 20. The Kolmogorov–Smirnov test was also used to describe the normality of our variables and followed by parametric tests. Independent t-test was used to compare and determine the parametric data between the two groups and repeated measurement test to compare the parametric data in two point times. The data were represented as mean standard deviation. P-value < 0.05 was considered as statistically significant.

RESULTS

The mean age of the women in the education and control groups were 24.360 ± 0.703 and 24.530 ± 0.701 years. Before education in two groups of education and control, Independent- Samples t-test did not show any statistically meaningful difference in terms of age (p = 0.702) (**Table 1**).

Table 2 shows the average rates of stages of change (p = 0.001, t = 5.10, df = 200), processes of change (p = 0.020, t = 3.17, df = 200), self-efficacy (p = 0.020, t = 3.03, df = 200), in intervention group was increased meaningfully after intervention (P-value < 0.05); these changes were not meaningful in control group (P-value > 0.05). There was also statistically meaningful difference in decisional balance (p = 0.001, t = 2.08, df = 200) in intervention group after intervention (P-value > 0.05). These changes were not meaningful in control group (p = 0.221). The education group lost significantly more weight at final follow-up than the control group (p = 0.003, t = 4.064, df = 200).

DISCUSSION

Each stage had a fairly large sample size, with the exception of the precontemplation stage. In the current study, the changes in self-efficacy average scores showed an increasing trend from the elementary to advanced stages and differences among stages of behaviour were significant. The increase in self-efficacy among the five stages has been confirmed by studies [24-26]. In Hanna Konttinen study emotional eating and PA self-efficacy were independent pathways between depressive symptoms and higher adiposity, and this finding

Table 1. *Mean of age, weight, height, body mass index in two groups education and control before education.*

Variables	Education	Control	
	Mean ± SD	Mean ± SD	Independent- Samples t-test
Age (year)	24.360 ± 0.703	24.530 ± 0.701	t = 0.252, p = 0.702, df = 200
Marriage duration	6.469 ± 1.345	6.79 ± 1.145	t = 0.09, p = 0.828, df = 200
Number of children	1.690 ± 0.042	1.290 ± 0.632	t = 0.211, p = 0.733, df = 200
Marriage age (year)	19.642 ± 0.329	19.261 ± 0.385	t = 0.145, p = 0.955, df = 200

Table 2. *The comparison among the average of studied variables in group of education and control, before and after intervention.*

Groups	Education			Control			Independent- Samples t-test
Variables	Before Mean ± SD	After Mean ± SD	P-value	Before Mean ± SD	After Mean ± SD	P-value	
Stages of change	2.175 ± 1.272	6.355 ± 1.342	< 0.001	2.100 ± 1.172	3.325 ± 1.142	0.109	p = 0.001, t = 5.10, df = 200
Processes of change	4.214 ± 3.206	8.614 ± 3.406	< 0.001	4.017 ± 3.106	3.914 ± 3.206	0.620	p = 0.020, t = 3.17, df = 200
Decisional balance	2.775 ± 1.272	1.175 ± 1.908	< 0.001	2.795 ± 1.472	1.175 ± 1.908	0.930	p = 0.001, t = 2.08, df = 200
Self-efficacy	18.317 ± 5.763	22.447 ± .783	< 0.001	18.317 ± .763	19.447 ± 5.983	0.960	p = 0.001, t = 3.03, df = 200
Sexual function	1.242 ± 0.429	1.081 ± 0.273	0.002	1.181 ± 0.385	1.181 ± 0.385	0.121	p = 0.003, t = 4.064, df = 200

was consistent in men and women and age and education groups [27]. Processes of change in present study were significantly. There are recent recommendations regarding the sexual function [28]. Processes of change in Gillison's study were significantly [29]. In Gillison's study, the data broadly support the theoretical model for supporting some changes, but not for all.

The decisional balance was significant in our study. That is, education has had meaningful statistical difference in the score of decisional balance in education group. The results of the study are not consistent with the studies of Greene GW, Greene JD, Krummel DA [30, 31]. Therefore, it may be necessary to spend more time justifying and training to increase the score of decisional balance [28, 32]. The media can help increase the pros of better sexual function in the married women. The cons are often long-range, whereas the pros are short-range. As has been suggested elsewhere, health expectations may persuade contraceptive methods choices only when the health consequences are expected to be soon, severe, and easy to recognize. The pros may be more inclined to change than the cons, because the pros are more sensible and immediate, whereas a reduction in the cons requires longer-term maintenance. The average rates of sexual function in the education group increased meaningfully (P-value < 0.05); this change was not meaningful in the control group. Five factors or domains of sexual function (desire and subjective arousal, lubrication, orgasm, satisfaction, and pain/discomfort) were not meaningful in the control group. The results are consistent with the study of M. Tavares showed that the main cognitive processing factors associated with sexual functioning include cognitive distraction and attentional focus, automatic thoughts and sexual cognitions, causal attributions to negative sexual events, efficacy expectations, and perceived performance demands [33]. In study men and women, infertility-related relational stressors were as-

sociated with their own lower sexual arousal, as well as with their own and their partner's lower sexual satisfaction. Sexual dysfunctions can appear in both partners and might provoke problems in every stage of sexual response [34]. Accumulating evidence suggests that vulvovaginal atrophy (VVA) is strongly associated with female sexual dysfunction (FSD) among sexually active postmenopausal women [35, 36]. Significant impairment of sexual function was demonstrated in Italian postmenopausal women who were clinically confirmed with signs of VVA through gynecological examination [8].

In Schiavi's study, Female Sexual Function Index, Female Sexual Distress Scale showed a statistically significant improvement after 6 months [37].

Understanding the strength of influence that each antecedent had on behavior can help researchers determine how successful their design was, compare to similar research using the same antecedents, and inform future research. Since developing healthy sexual behaviors is a complex process that is influenced by many factors, it is likely that continuous programming over a long period is needed. The authors acknowledge the fact that regarding to the study exclusion criteria, women which having pregnancy, breast feeding, menopausal, vulvovaginal-atrophy, pelvic prolapse, female infertility were not enrolled. Indeed, it is not clear that our findings are also applicable to these women' groups or not. This shows the important significant role of sexual health centers in forming healthy behaviors in women. The most important limitation of this study is that despite the use of self-report questionnaire due to the nature of the questionnaire responses it is debatable validity.

CONCLUSIONS

Findings of this study confirmed a specific pattern of constructs such as stage of change, self-ef-

ficacy, and processes of change, which were significant. The findings of this study based on TTM, could be a good guideline for designing interventions in women sex education program, also could be used to prepare stability of women to continue appropriate sex education from return to previous habits. The environment may contribute to the high prevalence of sexual dysfunctions observed among Iranian women. Women should be encouraged to express sexual orientation to their husbands and sexual problems to health care providers in health centers in Iran. Women should not be ashamed to talk about sex.

COMPLIANCE WITH ETHICAL STANDARDS

Authors contribution

Z.J. entirely contributed to this work.

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None.

Study registration

N/A.

Disclosure of interests

The author declare that she has no conflict of interests.

Ethical approval

In this study, all procedures performed on human samples were conducted following the relevant guidelines and regulations of the Helsinki Declaration. The study protocol was approved by the Research Ethics Committee in Iran.

Informed consent

An informed consent was obtained from all of the participants.

Data sharing

Data are available under reasonable request to the corresponding author.

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