

Development and psychometric properties of the Mothers' Sex Education Ability Questionnaire (SEDA)

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Abstract

Background Preschool sex education can prevent sexual abuse and promote the sexual health and well-being in children. Mothers have vital role in this regard. This study was conducted to develop and psychometrically evaluate an instrument for assessing mothers' sexual education ability. Methods The study included two phases: qualitative ad quantitative. In qualitative phase, a sample of mothers who had a child aged 3-5 years old in nursery schools was interviewed in order to generate an item pool. Then preliminary questionnaire was provided. Consequently, content and face validity were assessed. Finally, a qualitative study was conducted and sample of women completed the questionnaire to explore the factor structure of the instrument. Reliability (internal consistency and stability), was also evaluated using the Cronbach's alpha coefficient and intraclass correlation coefficient. Results A 51-items questionnaire was developed during the qualitative phase. After content and face validity, the items were decreased to 48. Then 250 women completed the questionnaire. The results obtained from explanatory factor analysis indicated a five-factor solution (attitudes, skills, cognitive issues, situational consideration) that jointly accounted for 87.5% variance observed. The Cronbach's alpha for 5 factors ranged from 0.68 to 0.96 and the stability of the questionnaire varied from 0.80 to 0.82. During the quantitative phase overall 9 items were removed and the final instruments consisted of 46 items. Conclusion The findings suggest that the Mothers' Sex Education Ability Questionnaire (SEDA is a valid and reliable questionnaire. It is simple and easily scored and compromises significant concept for assessing mother's sexual education ability.

Background

The pre-school age is the time of encounter, education and communication of children with the world outside the home. This age is important because learning of the child during this period is fast. In this period environment has greatest influences on children leading to form attitudes, habits and behaviors on later life [1]. In this era of childhood, due to the formation of personality, a child needs to receive guidance from reliable sources on the evolution of different parts of the body, including sexual organs [2]. Sexual evolution is part of human life that begins at birth [3].

In general, the aim of sex education is to provide relevant sex information and sexuality and improve knowledge and skills for making appropriate decisions [4]. However, child sex education aims to promote sexual health and wellbeing of children and also prevent children from sexual abuse during this period or later [5]. Hanbing and Yongjie believe that the goals of sex education for preschool children should be focused on gender recognition, gender role validation, and gender analysis [6]. Furthermore, early sex education leads to healthy interpersonal relationships and enjoying sex in later periods of life [7, 8]

In this regard, parents are considered as the first and foremost sex education teachers. In Iran parents are not well trained in this field [3] and most of them are reluctant to answer the sexual questions of their children [9]. Among parents, the role of mothers in the sex education of preschool children is even more prominent [10, 11]. Most mothers are afraid to talk to their children about sex, and they believe that these conversations can lead to early exposure to sexual issues among their children [12].

In a review of behavior change theories in sex education the most commonly used framework was social cognitive theory (SCT) [13, 14]. Indeed, successful educations were more likely to use behavioral change

theories accordance with SCT, including methods to enhance self-efficacy (SE) in caregivers.

Caregivers self-efficacy (PSE) referring to one's beliefs in their capabilities to engage in efficient behavior to reach desired goals for the child. An example of PSE is a mother's beliefs in her capabilities to promote healthy sexual behaviors in her child. SCT is based on an agentic perspective on human development, adaptation, and change, which means that individuals are intentionally influencing their functioning and life conditions [15]. According to SCT, SE is the leading mechanism of human agency, and thus the foundation of human motivation and action [16]. The perceived SE depending on contextual factors, e.g. Knowledge, comfort, skills and confidence are all factors related to self-efficacy and behavioral capability.

Valid instruments provide various information on factors compromised a range of behaviors, and personal and situational condition that may influence on successful behavior.

Review of the literatures has shown that most of the tools used in this field have examined the knowledge and attitudes of mothers [17] or other people in contact with the child [18], or they examine the effectiveness of maternal sex education programs. For example, a study among 55 mothers with preschool children showed that knowledge of mothers and their attitudes after intervention has been a significant improvement [19]. In Iran, talking about sexual issues is taboo and family and other child caregivers are not well educated about sexuality-related issues. Furthermore, there is lack of school-based sexual education [20]. With skillful sexual education, children' sexual development goals will be attained [3]. Due to theory of psychosexual development; age 4-5 is the time when libido center transfers to genital area. Children's attention is paid to their genital and they become curious about issues like birth, sex and the differences. Thus measuring mothers' ability or other caregivers in sex education is an important issue in health education and health promotion However, since there were no such instruments available we aimed to develop an instrument for measuring mothers' ability in sex education for preschool children. We also aimed to evaluate the psychometric properties of this instrument among a sample of mothers with preschool children based on theory of psychosexual development.

Methods

Design and data collection

This was a methodological study [21] and was conducted to design a questionnaire for assessing mothers' sex education ability to preschool children in Iran, in 2018. In this study, only interviews with mothers were used due to the fact that in Iran mothers are culturally responsible for the education of children, although the new educational evidence in the world emphasizes the responsibility of parents in educating children. Data collection was carried out in two phases. The first phase was conducted to generate an item pool and the second phase was conducted to evaluate the designed questionnaire.

Phase 1

Item generation

In order to generate an item, pool the following steps were carried out:

(i) Interview with mothers: First, 293 nursery schools from the city of Karaj (a metropolitan city in the center of Iran) were listed. Then, 20 nursery schools were randomly selected and one mother who had a child from each nursery was selected and interviewed (in total 20 mothers who had 3-5 years old children). It clears for the mothers that they were not going to be 'judged' for their answers the duration of each interview lasted for 45-60 minutes. Each interview was recorded and transcribed immediately after interviews. Accordingly, the unit of

(ii) Meanings were identified and preliminary collections of items were generated (92 items).

(ii) Delphi Rounds: During Delphi rounds, experts' opinions about the early version of questionnaire were obtained. Delphi is a structured and accepted process for collecting data in specialized domain and reaching consensus among experts [22]. During current study, Delphi rounds continued until the consensus of experts occurred (with three Delphi round and 25 specialists) [23]. For Delphi rounds, items were given to experts, and they were asked to indicate their agreement with each item based on a 5-point Likert scale (strongly agree to strongly disagree). They also specified their own suggestion if they felt a correction is needed. The statistical analysis of the responses was performed by calculating the central and dispersion indicators using quartiles, mean and standard deviation. Items with 75 percent or over agreement, kept in questionnaire and the remaining items with a 25 percent or less have been deleted from the questionnaire. Then the second Delphi round was conducted and some items were deleted at this stage. During the third Delphi round, the consensus was achieved. The agreement of 80% of the members was considered as consensus [24]. In all 41 items were deleted during Delphi rounds and 51 items kept in early version of the questionnaire.

(iii) Providing pre-final version

At this stage content and face validity was performed. For content validity a group of experts (10 specialists in public health) evaluated the questionnaire, CVR (content validity ratio) and CVI (content validity index) were computed. In assessing the content validity ratio, the results were compared with the Lawshe's table. The acceptable level of CVR in the Lawshe's table was determined to be 0.62 for 10 panelists; therefore, two items with CVR less than 0.62 were omitted from the instrument and items reached to 49 items. However, during e, the content validity index calculation, all items was maintained in the questionnaire as CVI was more than 0.79. Face validity refers to understanding and perceptions of the target population regarding the scale [25]. In this stage, both qualitative and quantities methods were used. During qualitative section, 10 mothers evaluated the questionnaire with regard to the importance of the items based on a 5-point Liker scale to calculate the Item Impact Score (Impact Score = Frequency (%) × Importance). At this stage 1 item was removed since its impact score was less than 1.5. At qualitative stage, we asked 10 mothers to score items regarding 'relevancy', 'ambiguity' and 'difficulties'. At this stage three items were modified. All together during content and face validity three items were deleted and pre-final version of the Mothers' Sex Education Ability Questionnaire (SEDA) consisting of 48 items was provided for psychometric evaluation.

Phase 2

Main Study

A cross sectional study was conducted to assess the psychometric properties of the Mothers' Sex Education Ability Questionnaire. A convenience sample of mothers with 3 to 5 years old child was entered into the study. The sample was randomly selected from 293 nursery schools in Karj, Iran. As such first 20 nursery schools were identified. Then proportion to population size required number of women recruited and completed the questionnaire.

Statistical Analysis

Construct validity was assessed by using explanatory factor analysis (Varimax rotation) and 0.3 was considered as the minimum acceptable degree of correlation between each item and extraction factor [26]. To determine the reliability of the questionnaire, the Cronbach's alpha and Intra class Correlation Coefficient was calculated for each factor. For ICC calculation, 15 mothers were completed the questionnaire two times with ten days' interval.

Results

Participants

In all 250 mothers with 3-5 years of aged child were studied. The mean age of mothers was 34.7 ± 5.54 years. The characteristics of mothers are listed in the Table1.

Construct validity

To investigate the construct validity, exploratory factor analysis was used. The sampling adequacy was tested by Kaiser-Meyer-Olkin (KMO); and a value of 0.919 was obtained [27]. Bartlett's test was significant with $X^2 = 7606.534$, $df = 1176$, $P < 0.001$. Due to communalities table, two items were omitted due to value less than 0.3[20]. Considering Eigenvalue above one, five factors were identified that jointly explained 87.57% of the variance observed (46items). Based on the arrangement of the factors, they labeled as attitude (28 items), skill (3 items), self efficacy (5 items), cognitive issues (5 items) and situational considerations (5 items). The results are shown in Table 2

Reliability assessment

The Cronbach's alpha for 5 factors ranged from 0.68 to 0.96 and the stability of the questionnaire as assessed by interclass correlation coefficient (ICC) varied from 0.80 to 0.82. The results are shown in Table 3.

Discussion

Sexual health is one of the main indicators in the children and teenager developmental process, which is depends on the proper acquisition of information, the appropriate formulation of attitudes, beliefs, values,

desirable directions for gender identity and communication [28] is believed that preschool sex education is one of the social and cultural challenges worldwide [29]. The children and teenagers receive various quality sex information and messages from different sources during daily life (media, religious organizations, schools, parents, care givers, etc.) [30, 31, 32]

Studies have shown that parents who have enough skills in talking to their children have more sexual knowledgeable children [33]. Mothers have a key role in the sex education [34, 35]. In the Iranian culture and various cultures talking about sexual issues is not usual and thus mothers refuse sexual conservation with their offspring [36] On the other hand parents used inappropriate methods for sexual education, because of lack of knowledge and skills. Inability to distinguish normal behaviors related to children's growth and sexual development and abnormal behavior confused the parents for employing the use of appropriate educational strategies for their children [36, 37]

Assessing the ability of mothers in this field is an essential principle, which requires a valid and reliable instrument current study developed an instrument to respond to the needs for having a proper instrument in this field and compromised from 46 items with 5 factors (attitude, skill, self-efficacy, cognition issues, and situational consideration).

Attitudes refer to parents' point of views, approaches, feedbacks and the ways they think about child developmental. It is argued that parenting attitudes are influenced self-efficacy, which has been broadly defined as the level of parents' self-belief about their ability to succeed in the parenting role [38]

Evidence indicates that a number of obstacles for sex education including lack of knowledge and communication skills exist [39]. There are various studies worldwide that focused on mothers' knowledge and attitude about sexual education, but in these studies, parents 'and other caregivers' awareness and attitudes are often assessed using ad hoc instruments. Thus the contribution of the current study might be considered very important both for research settings and for practice. Obviously, providing a coherent and comprehensive instrument taking into account all dimensions of knowledge, attitude, self-efficacy and different cultural and environmental situations and communication skills of parents is almost impossible. This study was performed only on mothers due to lack of access to fathers, which is one of its limitations. However, this questionnaire can also be used to assess the ability of fathers. Second Given that this study was conducted among Iranians mothers, the findings of this study might not be generalized to all mothers in the world and this instrument should be validated in other cultures and countries.

Conclusion:

This study performed to design and validate a questionnaire related to mothers' sex education ability. The SEDA showed good validity and reliability. The SEDA now can be used by health education and health promotion specialist to assess mothers' ability and perhaps develop proper interventions.

List Of Abbreviations

SEDA: The Mothers' Sex Education Ability Questionnaire: SE: Self Efficacy

Ct: Cognitive Issues

SC: Situational Consideration

KMO: Kiser Meyers Olkin

Declarations

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Competing interest

The authors declare that they have no competing interests.

Data availability

All datasets in this study are available from the corresponding author in request.

Authors' contributions

MS was the main investigator, analyzed the data and involved in drafting the Manuscript. LS has supervised the study; contributed to the study design and conducted the analysis. AM critically evaluated the manuscript, helped in writing process and edited the paper. All authors read and approved the final version of manuscript.

Ethical consideration:

The ethics committee of Alborz University of Medical Sciences approved the study (Ethical Code: IR.ABZUMS.REC.1396.95). For audio taping interview content, the participants' permission was obtained. All the participants were informed about the purpose of the study and if any participant was not willing to participate in study, he/she was excluded. Written consent form was signed by each participant and it was clear for the participants that they were not going to be 'judged' for their answers. All participations were assured regarding their privacy.

Consent for publication

Not applicable

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Tables

Table1: The demographic characteristics of the mothers

Percent	Number	Demographic characteristics
		Age
27.7	68	21-30
57.2	143	31-40
15.6	39	41-50
		Education(Year)
46	115	<12
40.8	102	12-16
13.2	33	<16
		Occupation
77.2	193	Housework
10.8	27	Occupation related to medical groups
11.2	28	Occupation unrelated to medical groups
		Number of Child
46.1	104	One
46.4	116	Two
12	30	Three
		Socio-Economic Status
4	10	Weak
54.8	137	Intermediate
38.4	96	Good
4.8	7	Very Good

Table2: The results obtained from exploratory factor analysis using varimax rotation

Factor5	Factor4	Factor3	Factor2	Factor1	
10	0.039	0.126	0.240	0.844	1. Mothers are responsible for girls' sexual education.
07	-0.062	-0.109	0.092	0.824	2. Viewing the sex-related behaviors of the children is based on observational learning and does not relate to their need and desire.
15	0.088	0.165	0.125	0.822	3. Providing sexual information to the child should be appropriate with his understanding.
065	-0.013	0.123	0.153	0.814	4. Children aged 3-5 years should not wear non-homogeneous clothing.
66	-0.008	0.115	0.196	0.800	5. Mother does not have the right to joke to her son's private member.
33	-0.016	0.209	0.206	0.788	7. Using of inappropriate sex words is not natural for children aged 3-5 years.
069	0.084	0.005	0.075	0.783	8. Practical education of sexual behaviors (proper behavior models) is more effective than theoretical education
7	-0.165	0.243	0.205	0.782	9. Child sexual education protects them against sexual abuse.
058	0.016	0.159	-0.083	0.760	10. three - five years old hetro- sexual children should not be alone
23	0.132	-0.032	0.174	0.754	11. Answering particular children's questions should be with control of the tone of voice and look and encourage children to ask for sexual questions.
85	-0.068	0.268	0.231	0.746	12. Children with appropriate sex education are less likely to become sexually abusive.
.71	0.092	0.271	0.146	0.717	13. Hetrosexual parents should not take his child to the bathroom without proper clothes.
04	0.068	-0.051	0.131	0.715	14. Children do not have any imagination about genital organ of up to 4 years of age
76	0.004	0.310	0.186	0.710	15. I do not need to kindergarten instructor teaching if I take responsibility for my child's sexual education.
.45	-0.147	0.331	-0.052	0.699	16. The father should not be kidding his private son.
92	-0.227	0.328	0.045	0.693	17. The mother should have proper clothes in front of her son
25	0.244	-0.026	0.177	0.688	18. Children's sex education programs should be scientific, regardless of family values and beliefs
25	0.041	0.146	0.254	0.651	19. The mother should also take her son's sex education responsibility.
72	-0.023	0.095	0.0476	0.630	20. Choosing a good name for a child's sexual organs is a positive message.
82	-0.002	0.100	0.126	0.590	21. Sex education should be done with a specific method
07	0.247	0.033	-0.156	0.567	22. It is essential to start a sexual education for children aged 3-5 years
12	-0.130	0.469	0.278	0.578	23. Mothers need to know that children have right to decide who kisses or touches them.
23	0.056	0.146	0.174	0.549	24. Children cannot see any kind of movie with their parents

27	0.189	0.179	-0.166	0.542	26. It is better imperceptible looking at private organ of an opposite baby become parts of a sexual education program
52	0.024	0.136	0.224	0.507	27. Mother should not touch or see his child without permission (even as a joke)
94	0.380	0.300	-0.101	0.430	28. The ideas of teachers and other adults about sexual issues affect the beliefs of children.
05	0.106	0.074	0.810	0.201	29. I have necessary skills to protect my child from receiving inappropriate sexual information
38	0.201	0.085	0.806	0.300	30. I have necessary skills to answer my child's specific questions without feeling of shame
78	0.364	0.213	0.617	0.101	31. I can answer my child's specific questions without making him rude
38	-0.002	0.687	0.157	0.113	32. I'm sure I can answer my child's sexual questions in scientific manner without provoking a curiosity.
38	0.218	0.562	0.033	0.283	33 I'm sure I can answer my child's questions without feeling anxious.
84	0.001	0.538	0.247	0.389	34 I am sure that I can give him information about sexual issues without creating feelings of fear and sin in my child.
61	0.068	0.491	0.079	0.102	35. I'm sure I can develop appropriate sex behaviors with proper sexual education
69	0.041	0.455	0.118	0.306	36. I'm sure I can protect my child with proper sex education from early arrival to sexual issues.
11	0.689	-0.199	0.039	0.109	37. Children do not have sexual self-satisfaction behaviors
37	0.680	-0.093	0.227	0.032	38. Children aged 3-5 years old, have no sexual stimulation
47	0.530	0.210	0.107	0.267	39. Children aged 3-5 years old, even if engaged in sexual issues, it is short period
22	0.523	0.183	0.081	-0.197	40. Touch of private organ in children 3-5 years old is normal behavior
01	0.382	0.183	-0.070	0.374	41. In answering to children's questions should not be lying.
11	0.112	0.410	-0.036	-0.117	42. Wearing non-homogeneous clothing is not common in a child aged 3-5 years old
94	0.267	0.026	0.101	0.056	43. Children who are engaged in sex playing in this age should be monitored
26	0.143	0.169	0.126	0.442	44. To illustrate sexual issues for children aged 3-5 years old, you can use natural examples in animals and plants
01	0.112	0.168	0.322	0.341	45. Children who entered in sexual playing (doctor's game) should not be punished
87	-0.176	0.222	0.462	0.356	46. Inappropriate life style evoke early sexual feeling in child
10	1.845	2.249	3.516	17.99	Eigen value
26	3.925	4.786	7.481	38.249	% of variance

Factor1: Attitude, Factor2: Skill; Factor3: Self Efficacy; Factor4: Cognitive issue; factor5: Situational.

Table 3: Cronbach's alpha of the Mothers' Sex Education Ability Questionnaire

	Cronbach's Alpha Coefficient	Factors
5	0.966	Factor1(Attitude)
1	0.819	Factor2(Skill)
0	0.70	Factor3(Self-Efficacy)
0	0.680	Factor4(cognitive issue)
2	0.711	Factor5(Situational consideration)