



# The relationship between parental awareness and self-efficacy with defecation control skills in Iranian toddlers

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## Abstract

**Background and aims:** Toddlerhood is an important period of a child's development to master the functioning of the bowel and bladder sphincters. In this regard, the present study aimed to determine the relationship between parental awareness, self-efficacy, and defecation control skills in Iranian toddlers.

**Methods:** The present study was descriptive cross-sectional research. The questionnaires on Demographic information of children and parents, parental awareness and self-efficacy, and defecation control skills were completed by 72 mothers of children aged 18-24 months old in the city of Ramsar. The data were analyzed using SPSS 18, descriptive tests of mean and standard deviation, analytical tests of analysis of variance, independent t-test, and Pearson's correlation coefficient.

**Results:** The results showed that the awareness and self-efficacy level was at a medium level of  $17.70 \pm 2.9230.54 \pm 7.15$ , and their children's defecation control skill was at a high level  $8.88 \pm 2.91$  respectively. Also, there was a positive significant relationship between parental awareness ( $r=0.19$ ,  $P=0.02$ ) and self-efficacy ( $r=0.20$ ,  $P=0.01$ ) with defecation control skills. There was a significant relationship between the mother's occupation ( $P=0.04$ ), the father's age ( $P=0.04$ ), and parental self-efficacy ( $P=0.04$ ). In addition, a significant relationship was found between the child's age ( $P=0.03$ ) and the mother's age ( $P=0.01$ ) with the child's defecation control skill.

**Conclusion:** Promoting awareness and self-efficacy in training defecation control skills is a necessity for parents, and the policymakers should include the integrated care of children in the educational programs of the Ministry of Health so that it is included in the agenda of routine care of health centers in the country.

**Keywords:** Awareness, Self-efficacy, Defecation, Toilet training

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## Introduction

One of the most important periods of human life is childhood, in which personality is formed (1). A child's growth and development is a multi-dimensional process, including physical, mental, social, emotional, and ethical development, that helps the individuals around the child to understand and treat the child correctly (2).

One of the stages in a child's growth and development is childhood, which typically includes between 18 months and 36 months. In this period, the toddler gradually steps into the stage of independence from the dependence of infancy (3). Mastering the functioning of the bowel and bladder sphincters is one of the important developmental skills in this period, which leads to defecation control skills in the child (4). It is different for all children when they achieve such a skill. However, it typically starts between

18 and 24 months old, and psychological, physiological, and mental factors play roles in preparing the child to achieve the skill. The starting age of toilet training (TT) in a healthy and normal child is between 2 and 4 years old when the physical, physiological, and psychological signs indicate the child is ready to learn the skill (5).

Prerequisites for using the toilet include the child's ability to distinguish urine and feces, reach the toilet, pay enough attention to sit at the right time, avoid resistance, understand the sequence of necessary tasks, and gain self-confidence (2). According to the guidelines of the American Academy of Pediatrics, it takes 3 to 6 months for a child to master toileting (6).

Toilet training is an important event in a child's life and should be performed in certain capacities and real time. Failure to control defecation at the age the child is expected

will cause negative effects on the child's self-confidence, stress in the child and parents, and tension between the child and the parents. Parental participation in promoting normal growth and development in their children is very important (7). Therefore, normal children who are prepared for TT should be trained by involving parents. In addition, health experts should identify children with problems in their development stages and help their parents by providing the ways of TT to their parents (8). On the other hand, self-efficacy is necessary for parental performance (9-11) and an important task for health staff (6).

Albert Bandura believed that self-efficacy is "an individual's belief in success in a certain situation or performing a task." The sense of self-efficacy can play a valuable role in reaching goals, performing tasks, and overcoming challenges (12).

Given the concept of self-efficacy defined by Bandura, parental self-efficacy is related to a parent's beliefs or judgments about his/her abilities to organize and perform tasks related to parenting (13,14). Regarding family, parents understand that children depend on them. So they have duties and responsibilities to take care of their children. Furthermore, parental self-efficacy is associated with the child's growth consequences (15). Since attaining control of the bladder and bowel is a process that usually happens at home and parents, especially mothers, play a vital role, they must have sufficient knowledge and awareness of this matter (16). Therefore, parents should be informed of the correct method of TT.

On the other hand, the habit and behavior of defecation control in the child should be trained correctly and on time so that the correct habits are formed in the child as soon as possible. The sooner these habits are formed, the longer their effects will be (17). Therefore, educational planning seems necessary (18). Several studies showed in their study that awareness and self-efficacy had a significant relationship with child-parent communication (19- 21).

Jahanshahi et al and Hooman et al were the only researchers who conducted a qualitative study to investigate mothers' experience of defecation control in their children and to examine Iranian parental insight about the appropriate age, expected age, and the methods used for TT, as well as the problems caused due to preventing TT (22, 23). On the other hand, the use of incorrect and inappropriate methods of TT may cause negative effects (on the child's self-confidence, stress between the child and parents, tension between the child and parents, incontinence, bedwetting, urinary infection, and constipation) on the child, indicating the importance of the issue. Parental awareness and self-efficacy in TT is a necessity that has been ignored in the integrated care program of the Ministry of Health for children under six years old and is not routine care in healthcare centers in Iran. Therefore, this study aimed to determine the relationship between parental awareness, self-efficacy, and defecation control skills in Iranian toddlers.

## Methods

The present study was descriptive cross-sectional research in 2022. The population consisted of parents of children aged 18-24 months old in Ramsar. The sampling method was the simple random method. The researcher listed children's files between 18 and 24 months old by referring to the research settings. Then, the samples were randomly selected using the table of random numbers. Then, under collaboration with the health center, the mothers were called, and the research goals were explained. Then, they were invited to participate in the research.

Considering that the whole community was 80 people, 72 were included in the study. A list of volunteers was prepared. Then, an online group was created on the social network. The people who had the inclusion criteria entered the project. The inclusion criteria for mothers were being accessible via telephone calls and social networks (WhatsApp, Telegram, etc), the ability to use educational materials, the ability to answer questionnaires, willingness to participate in the study, literacy, absence of any physical disease and psychological disorder that affect the process of child's training, parents of children between 18 and 24 months old (6). The inclusion criteria for children were the age between 18 and 24 months, the absence of any physical disease and psychological disorder, the absence of any physical and movement defects, the absence of vision and hearing problems, the absence of neuromuscular, cognitive or behavioral disabilities (5), the ability to sit and walk, the ability to understand some verbal commands, being mentally prepared for defecation control before the start of TT as parents diagnosed (24), speech skills to express defecation needs, using no medicine that disrupts the process of attaining control on bowel (6). The exclusion criteria for parents were unwillingness to participate in the study, and for children was the occurrence of any acute or chronic disease and hospitalization of the child during the data collection period. They completed the questionnaires on parental awareness, self-efficacy, and defecation control skills in children. (25).

## Data collection tools

The data collection tools used in this study were the demographic questionnaires of children and parents, parental awareness, parental self-efficacy, and defecation control skills in children. Questionnaire of parental personal information: it included items such as parents' age, education, occupation, number of children, the geographical situation of living place, ownership status of the house where they live, and income. Questionnaire of child's personal information: it included the child's demographic information such as age, gender, and birth rank. Questionnaire of parental self-efficacy: it was presented in Thammajinda and colleagues' study using the self-efficacy scale of Schwarzer and Jerusalem based on Bandura's self-efficacy guide. The validity and reliability of this questionnaire were confirmed in a

similar study. It consisted of 12 items scored based on the Likert scale. It assesses the mean score of parental self-efficacy in managing a wide range of tasks and situations related to performing the child-oriented approach of TT. The scores ranged between 1 and 4 (12-48 score: low = 12-24; medium = 24-36; high = 36-48). A value of 4 indicated parental self-confidence, and a value of 1 indicated a lack of self-confidence in parents (6). The validity and reliability of the questionnaire were calculated and confirmed in this study (CVI=0.95, CVR=0.93), and Cronbach's alpha coefficient was 0.82.

**Questionnaire of parental awareness:** this questionnaire was developed based on the TT guide of the American Academy of Pediatrics. The items included the signs of preparation in parents, signs of preparation in the child, and evaluation of achievements in the trained child. It included 30 items. This questionnaire was developed in the study of Thammajinda et al, and its validity and reliability were confirmed in a similar study (6,26). Higher scores indicated higher awareness in parents [9-23 score: low = 0-10; medium = 10-20; high = 20-30].

The validity and reliability of the questionnaire were calculated and confirmed in this study (CVI=0.95, CVR=0.81), and Cronbach's alpha coefficient was 0.84.

**Questionnaire of defecation control skill in the child:** this questionnaire assessed the children's toilet skills. It was developed in the studies of Schum et al about TT skills and based on the AAP guide, and its validity and reliability were confirmed in a similar study (6,27). The validity and reliability of the questionnaire were calculated and confirmed in this study (CVI=1, CVR=0.77) and its Cronbach's alpha coefficient was 0.79 [0-13 score: low = 0-4; medium = 4-8; high = 8-14].

First, the research objectives were explained to the participants, and informed consent to participate in the study was obtained. The participants were assured that the information would remain confidential and that they had the right to withdraw from the study whenever they wanted.

### Data analysis

The data were analyzed using SPSS 18, mean and standard deviation, etc, to show the Demographic characteristics of parents referring to the healthcare center in the city of Ramsar and descriptive indices of parental awareness and self-efficacy and defecation control skill in children analysis of variance), independent t-test, and Pearson's correlation coefficient for show The relationship between the demographic characteristics with parental awareness and self-efficacy and children's defecation control skill in the participants referring to Ramsar healthcare center).

### Results

This study was conducted on 72 parents of children between 18 and 24 months old referred to the healthcare center in Ramsar (Table 1). The mean age of mothers was  $31.38 \pm 5.21$  in the age range of 22-44 years old, the mean

**Table 1.** Demographic characteristics of parents referring to the healthcare center in the city of Ramsar (n=72)

Demographic variable	Levels	Number	Percent
Child's gender	Male	35	48.6
	Female	37	51.4
Birth rank	1	52	72.2
	2	20	27.8
Number of children	1	45	62.5
	$\geq 2$	27	37.5
Mother's education	Under diploma	8	11.2
	Diploma	14	19.4
	Associate's degree	50	69.4
Father's education	Under diploma	8	11.2
	Diploma	14	19.4
	Associate's degree	50	69.4
Mother's occupation	Housewife	40	55.6
	Employee	32	44.4
Father's occupation	Employee	22	30.6
	Self-employed	50	69.4
Living place	City	57	79.2
	Village	15	20.8
Ownership status	Landlord	50	69.4
	Tenant	22	30.6
Income	Less than enough	9	12.5
	Enough	63	87.5

age of fathers was  $34.58 \pm 5.21$  in the age range of 25-50 years old, and the mean age of children was  $22.40 \pm 2.28$  months in the range of 18-24 months.

Table 2 presents the descriptive indices of parental awareness, self-efficacy, and defecation control skills in children under study.

Table 3 presents the relationship between the demographic characteristics of parental awareness and self-efficacy and children's defecation control skills in the participants (Table 3).

The results (of Table 3) showed that there was a significant difference between the mother's occupation and parental self-efficacy ( $P=0.04$ ); that is, housewives' self-efficacy was higher than that of working mothers. Moreover, there was a significant positive relationship between the child's age ( $P=0.03$ ) and the mother's age ( $P=0.01$ ) with the child's defecation control skill. There was also a significant positive relationship between the father's age and parental self-efficacy ( $P=0.04$ ; Table 3).

According to the results, there was a significant positive relationship between parental awareness ( $r=0.19$ ,  $P=0.02$ ) and parental self-efficacy ( $r=0.2$ ,  $P=0.01$ ) and the child's defecation control skill. There was also a significant positive relationship between parental awareness and self-efficacy ( $P>0.05$ ).

Table 4 presents the final model (2<sup>nd</sup> model). The results indicated that the mother's age and parental self-efficacy had a significant power to predict the child's defecation

**Table 2.** Descriptive indices of parental awareness and self-efficacy, and defecation control skill in children

	Mean ± standard deviation	Maximum-minimum	Level		
			Low No. (%)	Medium No. (%)	High No. (%)
Parental awareness <sup>a</sup>	17.70±2.92	9-23	2 (2.8)	57 (79.2)	13 (18)
Parental self-efficacy <sup>b</sup>	30.54±7.15	48-12	15 (20.8)	46 (63.9)	11 (15.3)
Defecation control skill <sup>c</sup>	8.88±2.91	0-13	5 (6.9)	24 (33.4)	43 (59.7)

<sup>a</sup> Parental awareness cutting point (low=0-10; medium=10-20; high=20-30). The cutting point was calculated using the following formula:

$$\frac{\text{raw score} - \text{minimum score}}{\text{maximum score} - \text{minimum score}} \times 100$$

<sup>b</sup> Parental self-efficacy cutting point (low=12-24; medium=24-36; high=36-48). <sup>c</sup> Defecation control skill cutting point (low=0-4; medium=4-8; high=8-14).

**Table 3.** The relationship between the demographic characteristics with parental awareness and self-efficacy and children’s defecation control skills in the participants referring to Ramsar Healthcare Center (n=72)

Demographic variable	Level	Awareness	Self-efficacy	Defecation control skill
		Mean ± SD	Mean ± SD	Mean ± SD
Child’s gender	Male	17.91 ± 3.09	30.02 ± 6.55	8.80 ± 3.12
	Female	17.51 ± 2.78	31.02 ± 7.73	8.97 ± 2.75
The test results		T=0.58, P=0.57	T=-0.59, P=0.56	T=-0.25, P=0.81
Birth rank	1	17.73 ± 2.91	30.26 ± 6.47	8.61 ± 2.82
	2	17.56 ± 3.03	31.25 ± 8.83	9.60 ± 3.11
The test result		T=0.11, P=0.92	T=-0.52, P=0.61	T=-1.29, P=0.20
Number of children	1	17.86 ± 2.93	30.00 ± 6.59	8.66 ± 2.72
	2 and more	17.44 ± 2.93	31.44 ± 8.04	9.25 ± 3.24
The test result		T=0.59, P=0.56	T=-0.83, P=0.41	T=-0.83, P=0.41
Mother’s education	Under diploma	18.3 ± 2.44	30.50 ± 6.41	10.00 ± 2.20
	Diploma	16.92 ± 2.40	32.07 ± 7.23	9.28 ± 2.72
	Associate’s degree	17.82 ± 3.12	30.12 ± 7.31	8.60 ± 3.05
The test result		F=0.74, P=0.48	F=0.40, P=0.67	F=0.95, P=0.39
Father’s education	Under diploma	18.50 ± 2.61	29.37 ± 6.34	9.75 ± 2.86
	Diploma	16.71 ± 2.89	33.14 ± 4.80	8.35 ± 3.15
	Associate’s degree	17.86 ± 2.96	30.00 ± 7.3	8.90 ± 2.88
The test result		F=1.18, P=0.32	F=1.18, P=0.32	F=0.58, P=0.57
Mother’s occupation	Housewife	17.27 ± 2.41	32.00 ± 6.50	9.30 ± 2.91
	Employee	18.25 ± 3.41	28.71 ± 7.59	8.37 ± 2.89
The test result		T=1.42, P=0.16	T=1.98, P=0.04	T=1.35, P=0.18
Father’s occupation	Employee	18.31 ± 3.44	29.63 ± 7.43	8.90 ± 2.09
	Self-employed	17.44 ± 2.65	30.94 ± 7.06	8.88 ± 3.23
The test result		T=1.18, P=0.25	T=0.71, P=0.48	T=0.04, P=0.97
Living place	City	17.63 ± 2.80	30.29 ± 7.16	8.73 ± 2.97
	Village	18.00 ± 3.42	31.46 ± 7.27	9.46 ± 2.69
The test result		T=0.43, P=0.67	T=-0.56, P=0.58	T=-0.86, P=0.40
Ownership status	Landlord	17.46 ± 3.15	31.18 ± 6.70	9.14 ± 2.84
	Tenant	18.27 ± 2.29	29.09 ± 8.05	8.31 ± 3.07
The test result		T=1.09, P=0.28	T=1.15, P=0.25	T=1.10, P=0.28
Income	Less than enough	17.33 ± 2.12	30.11 ± 7.91	8.66 ± 3.77
	Enough	17.76 ± 3.03	30.60 ± 7.10	8.92 ± 2.81
The test result		T=0.41, P=0.69	T=-0.19, P=0.85	T=-0.25, P=0.81
Child’s age		R=0.12, P=0.34	R=0.11, P=0.37	R=0.25, P=0.03
Mother’s age		R=-0.11, P=0.39	R=0.06, P=0.65	R=0.30, P=0.01
Father’s age		R=-0.19, P=0.10	R=0.23, P=0.04	R=-0.04, P=0.70

F=analysis of variance; t=independent t-test; r= Pearson’s correlation coefficient.

**Table 4.** The final regression model (2<sup>nd</sup> model) of the effect of independent variables on the dependent variable (the child's defecation control skill)

Variable	Beta coefficient		Standard error	T statistic	Significance level	95% Confidence interval	
	Non-standard	standard				Upper limit	Lower limit
Constant coefficient	14.15	-	2.03	6.97	<0.001	10.10	18.20
Mother's age	0.17	0.30	0.07	2.63	0.01	0.04	0.29
Parental self-efficacy	0.19	0.22	0.09	2.11	0.043	0.10	0.32
Summary of the 2D model	$P=0.01, F=6.91$		r-square=0.14		Adjusted r-square=0.13		

control skill.

## Discussion

The study aimed to determine the relationship between parental awareness and self-efficacy with defecation control skills in Iranian toddlers. The awareness and self-efficacy of parents referring to Ramsar Healthcare Center were at a medium level. In a study by Alie et al, parental self-efficacy was at a desired level, which was similar to the results of the present study (28). However, in the study by Bhattara and Bhusal (29) and Sharma et al (30), the awareness level of parents was low. This difference might be due to the different methodologies adopted and study settings in these two studies.

The defecation control skill of most children was at a high level, similar to the results of Andriyani and colleagues' study (31). Because in this study, most of the mothers were housewives, it can be effective due to high defecation control skills.

There was a significant difference between the mother's occupation and parental self-efficacy, so the self-efficacy of housewives was higher than that of working mothers. This result was similar to the results of Shrooti et al (32) because working mothers cannot take care of their children as well as non-working mothers. Indeed, a working mother spends several hours of the day away from the child, and when she comes home, the fatigue caused by today's machine world and mental fatigue does not allow her to take care of the child in the remaining hours of the day.

There was also a significant positive relationship between the child's age and the child's defecation control skill, which was similar to the results of Katkić and colleagues' study (33). Several studies showed that there was no significant relationship between the child's age and self-efficacy for TT (34-36). At this moment, it can be said that TT at the appropriate time (18-36 months) can be effective in controlling proper defecation due to the ability to control and bladder and anus sphincter, as well as awareness and physical and mental abilities (16,37).

There was also a significant positive relationship between parental awareness and self-efficacy. Various studies indicated a positive relationship between awareness and self-efficacy (38-42). This Relationship could be because increased levels of mindfulness and self-efficacy in mothers can improve the quality of the parent-child relationship. When parents experience a higher level of self-efficacy, they will perform better, leading to

improved defecation control skills in the child. Sarabi Jamab et al showed no relationship between awareness and self-efficacy (43); This can be due to ignoring parents' emotional problems, such as anxiety and depression, and marital problems, and the mothers with higher education postpone training for their children. Alie et al, Hatef et al, and Peyman et al showed that higher education and employment in mothers increased their self-efficacy (28,44,45). It can be explained that higher education and parents' understanding of the disease increased symptoms and signs, and parents try more to control themselves and the environment. They may actively obtain information and gain more social support that builds confidence in role performance.

There was also a significant positive relationship between the father's age and parental self-efficacy. In this regard, Fang et al showed a significant relationship between the father's age and parental self-efficacy (46). As the child gets older, fathers experience physical and mental changes that lead to improved performance and self-efficacy, which has a significant relationship with parenting and children's behavioral problems and reducing parental burden (47). However, the study of Kowk and Li (39) and Gordo et al (42) showed no significant relationship between the father's age and self-efficacy, which can be due to differences in the age of fathers and the accuracy of parental self-efficacy assessment tools in these studies.

The results indicated that the mother's age variable and parental self-efficacy could be meaningful predictors of the child's defecation control skill. Mother's age had the highest regression effect on the child's defecation control skill, and parental self-efficacy was placed in the next rank. The results of Shrooti et al (29) and Bhattarai and Bhusal (32) study were in line with the results of the present study, and Alie et al showed that there was an inverse significant relationship between the mother's self-efficacy and the mother's age (28). It can be explained that younger parents are more motivated to learn and can have positive control over children's behavioral problems by believing in themselves.

Since the present study was conducted in the city of Ramsar, the small number of samples limits the generalizability of the results, and studies in different geographical parts of the world are needed. Another limitation was that the results were self-reported. A strength of the present study was research in special groups (children) and examining the relationship between parental awareness and self-efficacy with defecation



control skills in children, which has attracted less attention in Iran. It is suggested that responsible institutions should be diligent in planning and implementing free educational interventions and appropriate economic, educational, and cultural support to improve parental awareness, self-efficacy, and defecation control skills in children.

### Conclusion

The status of awareness and self-efficacy of parents referring to Ramsar Healthcare Center was at a medium level, and the defecation control skill in children was at a high level. There was also a positive significant relationship between parental awareness and self-efficacy and the child's defecation control skills created a positive picture of the role of parental awareness and self-efficacy in defecation control skills; more attention should be paid to the awareness and skills of parents because any problem in this field in parents will negatively affect upbringing and development of children and will cause worrying results for children, which will continue until adulthood. Therefore, training parents on how to react and behave is a significant step that can be taken in reducing children's behavioral problems and the health of society. Improving parental awareness and self-efficacy in the field of TT for children is a necessity, and the policymakers should include the integrated care of children under six years in the educational programs of the Ministry of Health so that it is included in the agenda of routine care of health centers in the country.

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### Authors' Contribution

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### Competing Interests

The authors declare that there is no conflict of interest.

### Ethical Approval

Ethical considerations in this study included obtaining permission from the Ethics Committee of Babol University of Medical Sciences (Code: IR.MUBABOL.HRI.REC.1400.134) and obtaining written consent to participate in the study from the participants.

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