

Access this article online
Quick Response Code:

Website: www.jfcmonline.com
DOI: 10.4103/jfcm.jfcm_186_21

Assessing knowledge of Saudi mothers with regard to parenting and child developmental milestones

Faisal O. Alqurashi, Bassam H. Awary, Basim F. Khan, Sara A. AlARhain, Ali I. Alkhaleel, Batool A. Albahrani, Amnah S. Alali

Abstract:

BACKGROUND: Knowledge about childrearing and development of children greatly impacts on how parents can adequately and safely raise and interact with a child. This study aimed to assess Saudi mothers' level of knowledge of parenting and developmental milestones and describe the associated factors that affect their knowledge.

MATERIALS AND METHODS: This cross-sectional study was conducted in the Eastern Province of Saudi Arabia from January to February 2020. Four hundred Saudi mothers with children up to 6 years of age were included in the study from 20 randomly selected primary healthcare centers. The Knowledge of Infant Developmental Inventory Tool (KIDI-P) was used. Relevant demographic data were collected. Data were analyzed using the Statistical Package for the Social Sciences software version 21 (SPSS). One-way ANOVA and *t*-test were used to detect any significant differences in mother's knowledge about developmental milestones related to the research variables.

RESULTS: The majority of mothers (42.2%) were between 28 and 35 years of age. Knowledge about parenting scored on the average 53.3%, health and safety scored 63.4%, general principles 55.9%, and developmental milestones 51.8%. Data showed a statistically significant relation between mothers' age and parenting subscale (mean = 0.54, standard deviation [SD] = 0.18, $P = 0.001$), and mothers' education and parenting (mean = 0.52, SD = 0.18, $P = 0.015$). Significant differences were found between planned pregnancy and parenting (mean = 0.53, SD = 0.178, $P = 0.044$) and between planned pregnancy and child developmental milestones (mean = 0.51, SD = 0.12, $P = 0.042$).

CONCLUSION: Saudi mothers have limited overall knowledge of childrearing and developmental milestones of their children. Mothers' age, parental education, parity, and planned pregnancies had a positive effect on mother's knowledge of parenting and milestones parameters.

Keywords:

Child development, childrearing, developmental milestones, parenting

Department of Pediatrics,
College of Medicine, Imam
Abdulrahman Bin Faisal
University, Dammam,
Saudi Arabia

Address for correspondence:

Dr. Faisal O. Alqurashi,
Department of Pediatrics,
College of Medicine,
Imam Abdulrahman Bin
Faisal University, P.O. Box
11286, Dammam 31453,
Saudi Arabia.
E-mail: faisal.alqurashi@
yahoo.com

Received: 11-05-2021

Revised: 11-07-2021

Accepted: 26-07-2021

Published: 07-09-2021

Introduction

Child development is a fundamental reflection of a child's overall growth and physical maturity. "Developmental milestone" is a descriptive term used to denote physical, cognitive, social, and language skills demonstrated by a child as he grows up.^[1] It is essential to understand

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

that these milestones are different for each age range. Furthermore, we grow up at our own distinctive pace; therefore, predicting when a given skill will be precisely acquired is difficult. However, developmental milestones provide a broad estimate of when to observe particular changes as a child gets older.^[2] Knowing about these milestones greatly affects how adequately and safely a caregiver raises and interacts with a child.

How to cite this article: Alqurashi FO, Awary BH, Khan BF, AlARhain SA, Alkhaleel AI, Albahrani BA, *et al.* Assessing knowledge of Saudi mothers with regard to parenting and child developmental milestones. *J Fam Community Med* 2021;28:202-9.

Knowledge of child development can be acquired by understanding early childhood milestones, ongoing developmental processes, and familiarity with parenting skills.^[3] Studies from different developed countries found that maternal knowledge of child development positively correlated with the improvement of maternal ability to augment child development.^[4,5]

The term “parenting” refers to the continuous act of building and using the knowledge and skills required for planning, giving birth to, raising, and caring for children.^[6] High parenting efficacy and competence are demonstrated by parents who are very knowledgeable about the development of their child. On the other hand, parents with deficient knowledge showed inadequate parenting competence despite their parenting efficacy.^[7] Researchers have suggested that mothers with a good understanding of their children’s development are more likely to be responsive to their demands and use effective parenting methods to promote their cognitive well-being.^[8,9]

Parental knowledge of parenting and childrearing is crucial for a child’s physical development, cognition, and emotional maturity. Parents’ skills in raising a child are a determining factor on a child’s thoughts and have a unique impact on early brain organization and development.^[10] Another influential factor is the source of knowledge for these parents on how to deal with their children. A study conducted in Iraq on 400 mothers stated that for 71.5% of the mothers, their own experience was the source of knowledge.^[11]

The topic of parent’s knowledge regarding child development is very well-addressed in western countries. Since 1980s, this topic has been of interest to western child psychiatrists. The factors that may contribute to childrearing capabilities and obstacles were studied.^[12] Teti DM *et al.*, found that parental false correlation between what is expected of a child and his real behaviours contributes to significant stress levels.^[13] However, studying parental knowledge of child’s developmental milestones and the impact of such knowledge on parenting practices are comparatively recent in the Arab world. In comparison to Western literature, Middle eastern reports are scant and lack the required focus of a scientific consensus on the topic.^[11,14-19] A local study assessing maternal knowledge of children’s common health matters found that mothers’ knowledge of general childhood health problems such as breastfeeding practices, feeding challenges, vaccination knowledge, infants’ daily habits and norms, and environmental factors affecting children’s growth were deficient.^[14]

The available literature on parenting and parental knowledge of developmental milestones is uniquely

broad but should also focus on such topics as the effect of parenting knowledge and strategies on child’s cognition and emotional maturity,^[20] differences in cultural parenting practices,^[21] and the interaction between parental socioeconomic demographic factors and their level of knowledge of child raising practices.^[22]

After reviewing the literature, this study would serve as the first paper on the study of the level of knowledge and awareness of Saudi mothers toward childrearing and development of their children up to the age of 6 years. The aim of this study was to assess Saudi mothers’ level of knowledge of parenting and developmental milestones using a validated questionnaire-based tool and describe the associated factors affecting these parameters.

Materials and Methods

This cross-sectional study was conducted from January 1, to February 28, 2020. Ethical approval was obtained from the Institutional Review Board (IRB) vide Letter No. IRB-2020-01-007 dated 20/01/2020 and informed written consent was taken from all participants. Participants’ personal data were de-identified to ensure privacy, and all methods were conducted in accordance with relevant guidelines and regulations.

Participants were Saudi mothers of the Eastern Province of Saudi Arabia with children up to the age of 6 years who were willing to participate and gave their informed consent. There were no restrictions on mother’s age nor ethnic origin. Mothers of infants with confirmed developmental abnormalities, complicated perinatal and postnatal history, and/or neurologically deficient infants were excluded as these factors could contribute to false conclusions on developmental norms. Participants were recruited through field visits to a list of Governmental Primary Healthcare Centers in the Eastern Province, Saudi Arabia. A random selection of 20 out of 156 centers was done. The initial calculated sample size was 384 estimated by the Open Source Epidemiologic Statistics Calculator,^[23] with a confidence interval of 95% and a 5% margin of error. Conveniently, we interviewed a total of 400 participant mothers.

In this study, we used the revised Knowledge of Infant Developmental Inventory Tool (KIDI), which was originally formulated by MacPhee in 1981 and revised in 2002.^[24,25] Approval to use the KIDI tool was obtained from the original author before its application in this study. KIDI, formulated using a univariate scale of 58 items, was generated to assess a person’s knowledge of parenting practices, child developmental processes, and norms of a child’s behavior within an age range of 2–6 years old. The first 39 items of the original KIDI, which deals with knowledge about normative child

behaviors, ask respondents to indicate whether they agree, disagree or are unsure of the statements. In the second part (items 40–58) which dealt with child’s developmental milestones, if the respondents did not agree, they were to indicate whether a younger or older child would be able to achieve a particular milestone.^[25] Furthermore, in order to make the KIDI as comprehensive as possible, the instrument’s items were subdivided into four subscales, namely: Norms and milestones (24 items: 2, 6, 9, 23, 17, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, and 58), Principles (15 items: 3, 10, 11, 14, 16, 18, 21, 24, 26, 27, 29, 30, 32, 33, and 37), and Parenting (9 items: 1, 4, 7, 12, 13, 28, 35, 38, and 39), and finally Health and Safety subscale (10 items: 5, 8, 15, 19, 20, 22, 25, 31, 34, and 36).^[26]

The Portuguese version of KIDI-P which differs from the original KIDI, had revised the original inventory to include milestones adapted for pre-schoolers, kept the same 58 items with the response format (agree, disagree, or not sure) for all the questions, including the milestone items (40–58).^[26] We decided to follow the Portuguese response methodology to overcome the knowledge retrieval bias that may mask the mothers’ memory toward over/underestimating their children’s developmental milestones. In addition, in contrast to the original KIDI and KIDI-P, we decided to subdivide items on developmental milestones (Questions 40–58, 19 items) into three main categories: physical (7 items), emotional (4 items), and cognitive (8 items) for better and extensive analytical value. The Cronbach’s alpha test result for our study participants was (0.84), higher than the one reported by the Portuguese KIDI study (0.78).^[26]

Responses to the KIDI-P are scored as correct, incorrect, or not sure according to an answer key. Three final scores could be calculated (attempted, accuracy, and total) that reflect correctness and confidence in one’s knowledge. Attempted Index, is the index score concerned with confidence in a person’s knowledge; the Accuracy Index relates to exposure to solid and normative information about infants; and finally Total Index, represents the percentage of correct answers out of all the inventory items.^[27] More detailed information on the instrument development, standardization, reliability, validity, and scoring is available upon official request from the KIDI’s original author.^[24]

Data collection was carried out by four members of the research team in individual face-to-face interviews. Interviews involved the completion of a questionnaire composed of two parts: (a) demographic data (10 questions); (b) Knowledge of Infant Development Inventory’ (KIDI-P; 58 questions).^[26] The original language of the questionnaire is English, but an Arabic version of the tool was provided by the original author

following specialized forward and back translation by two bilingual doctors with Ph. Ds. The interviews, conducted in Arabic, lasted 30–45 min per person. Demographic data section consisting of 10 items was categorized into subcategories for better recall and analysis.

Data were analyzed using the Statistical Package for the Social Sciences software version 21 (SPSS) (IBM Corporation, NY, USA). Categorical variables are presented as percentage, and continuous data as means and standard deviations. All negative statements were reversed before the analysis. One-way ANOVA and *t*-test were used to detect any significant differences in mother’s knowledge about developmental milestones related to the research variables. The variables included parental age, education, work status, parity, child age, planned pregnancy, and any assistance in childcare and the source of this assistance.

Results

Four hundred Saudi mothers were interviewed. The largest group was aged between 28 and 35 years (42.2%), husbands aged 31–40 years made up 52%, and children more than 5 years old made up 26.2%. All mothers and their husbands had more than 12 years of education, 60.8% mothers and 58% husbands had a Bachelor degree. Most mothers were unemployed (57.2%) and almost two-thirds (285, 71.2%) had only one child. Majority of mothers (59.8%) reported that their pregnancies were planned. The majority of mothers had some sort of assistance in infant care 278 (69.5%), which came mainly from the mothers of 158 participants (56.8%). Neighbors provided the lowest level of assistance (3.6%) [Table 1].

The results showed that Saudi mothers had limited knowledge in parenting practices subscale with a total average score of 53.3%. Knowledge of normal bonding child behaviors, effects of holding babies when they cry, and discipline strategy were scored <50% inaccurately. Knowledge of health and safety issues scored an average of 63.4%. Mothers’ knowledge about the general principles subscale was also moderate with a total average score of 55.9%. Items that dealt with the effect of childrearing on future intellect and temperament, handling toddlers’ negative behavior, normal preschoolers playing patterns, and language acquisition sources were answered incorrectly by more than 50% of mothers [Table 2].

Overall, the results revealed a moderate level of knowledge of developmental milestone in our cohort with a total average score of 51.8%. However, the emotional aspect of developmental milestone scored the highest percentage of mothers’ correct answers (57.9%),

Table 1: Sociodemographic characteristics of Saudi mothers (n=400)

Variables	N(%)
Mothers' age (years)	
18-27	125 (31.2)
28-35	169 (42.2)
36-50	106 (26.5)
Mothers' education	
≤ 12 years	103 (25.8)
Diploma	54 (13.5)
University	243 (60.8)
Mothers' work status	
Working	171 (42.8)
Not working	229 (57.2)
Parity (baby)	
1	285 (71.2)
>1	115 (28.8)
Husbands' age (years)	
20-30	72 (18.0)
31-40	208 (52.0)
41-60	120 (30.0)
Husbands' education	
≤ 12 years	84 (21.0)
Diploma	84 (21.0)
University	232 (58.0)
Age of the child (years)	
<1	77 (19.2)
1-<2	61 (15.2)
2-<3	71 (17.8)
3-<4	32 (8.0)
4-<5	54 (13.5)
≥5	105 (26.2)
Planned pregnancy	
Yes	239 (59.8)
No	161 (40.2)
Received assistance with baby care	
Yes	278 (69.5)
No	122 (30.5)
Source of assistance (n=278)	
Mother	158 (56.8)
Mother-in-law	34 (12.2)
Husband	76 (27.3)
Neighbor	10 (3.6)

followed by their knowledge of cognitive skills (56.1%), and physical skills (43.4%). Most mothers were not aware of the ability of 2 years old to recognize dangerous actions (14.8%), children's ability to get dressed and undressed by themselves at the age of four (21.2%), reading four or more words at the age of 5 years (22.2%), and the ability to write a complete sentence at age of 6 years (25.2%) [Table 3].

On the other hand, mothers showed a higher level of knowledge concerning the possibility of their children being toilet trained at the age of 1 year (87.2%), ability of 2 year old to differentiate between make-believe

and true stories on TV (80.2%), 1-year-old infant's knowledge of right and wrong (79.8%), and ability of 2-year-old toddlers to reason logically, much like an adult would (79.2%).

In terms of summary scores of the KIDI-P responses, the mean for the total index was 0.54 (standard deviation [SD] = 0.103) indicating a fair level of Saudi mothers' knowledge of childrearing and developmental milestones of their children. The Attempted and Accuracy Indexes were higher 0.91 (SD = 0.108) and 0.59 (SD = 0.090), respectively [Table 4].

The results showed significant relation between mothers' age and parenting subscale (mean 0.54, SD = 0.18 with $P = 0.001$), whereas husbands' age had a significant relation with milestones subscale (mean 0.5, SD = 0.127 with $P = 0.037$). A significant relation was also found between mothers' education and parenting subscale (mean = 0.52, SD = 0.18, $P = 0.015$), and principles subscale (mean = 0.55, SD = 0.16 with $P = 0.002$). Husbands' education had a significant relation to parenting and general principles subscales [(mean = 0.52, SD = 0.18 with $P = 0.007$) and (mean = 0.55, SD = 0.17 with $P = 0.001$)], respectively. Parity showed a significant difference with principles (mean = 0.55, SD = 0.17 with $P = 0.02$) and milestones subscales (mean = 0.5, SD = 0.123 with $P = 0.008$).

The child's age was found to have a statistical significance with principles subscale (mean = 0.55, SD = 0.17 with $P = 0.023$). In addition, analysis revealed that planned pregnancies had a significant difference with parenting subscale (mean = 0.53, SD = 0.178 with $P = 0.044$) and milestones subscales (mean = 0.51, SD = 0.12 with $P = 0.042$). However, maternal work status, receipt of assistance, and the source of assistance did not have any significant relation with KIDI-P subscales [Table 5].

Discussion

This study assessed Saudi mothers' level of knowledge of parenting and developmental milestones and described its relation to different variables including parental age, education, work status, parity, child age, planned pregnancy, and discovered any assistance for child care as well as the source of this assistance.

Our findings revealed that Saudi mothers had a fair knowledge of childrearing and developmental milestones of their children. Our cohort revealed significant differences between accurate and attempted indices of the KIDI-P, meaning they were more confident in their knowledge regardless of the accuracy of their responses. This highlights the importance of intervention in early life assessment by knowledgeable health-care

Table 2: Saudi mothers' knowledge about parenting practices and normative child behavior

Items with numbers	Correct answers N (%)
1. When toddlers are strongly attached (bonded) to their parents, they are more clingy and tend to stick close to mom or dad	36 (9.0)
2. A 2 years old who is 2 or 3 months behind other 2 years old is retarded	321 (80.2)
3. Children often keep using the wrong word for a while, even when they are told the right way to say it (like "feet not footses")	314 (78.5)
4. Babies should not be held when they cry because this will make them want to be held all the time	133 (33.2)
5. If a baby (less than a year) wants a snack, give it nuts, popcorn, or raisins	322 (80.5)
6. Babies do some things just to make trouble for their parents, like crying a long time or pooping in their diapers	145 (36.2)
7. If you punish children for doing something naughty, it's okay to give them a piece of candy to stop the crying	255 (63.8)
8. A 2 years old can take a bath without being held	172 (43.0)
9. A typical 4 years old can print his (her) name	96 (24.0)
10. Infants understand only words they can say	187 (46.8)
11. If children are shy or fussy in new situations, it means they have an emotional problem	267 (66.8)
12. Talking to a child about things he (she) is doing helps its mental development	383 (95.8)
13. A 2 years old who says "no!" to everything and bosses you around is trying to get you upset	232 (58.0)
14. The way a child is brought up has little effect on how smart he (she) will be	199 (49.8)
15. Children have temper tantrums for no apparent reason	192 (48.0)
16. Once kids turn 3 or so, they become less defiant and negativistic – "No, I don't want to!"	165 (41.2)
17. A toddler who is energetic – always on the go – needs a low-sugar diet or Ritalin	84 (21.0)
18. Kids have little effect on how parents care for them, at least until they get older	215 (53.8)
19. When putting babies in the crib to sleep, place them on their back, not stomach	309 (77.2)
20. A 2-year-old boy who wets the bed has a problem and should be seen by a doctor	277 (69.2)
21. A brother or sister may start wetting the bed or thumb suck when a new baby arrives in the family	228 (57.0)
22. 4 years old are able to go to the toilet by themselves at night	227 (56.8)
23. The 2-year-old's sense of time is different from an adult	356 (89.0)
24. Most premature babies end up being abused, neglected, or mentally retarded	256 (64.0)
25. Children should be at least 5 years old before they are allowed to cross the street alone	219 (54.8)
26. Most 4 years olds can play simple board games such as checkers	161 (40.2)
27. The child's personality or temperament is set by 6 months of age; it does not change much after that	268 (67.0)
28. Some parents do not bond until their baby starts to smile and look at them	171 (42.8)

Contd...

Table 2: Contd...

Items with numbers	Correct answers N (%)
29. The way the parent treats a baby in the first months of life determines whether the child will grow up to be well-adjusted or a moody misfit	145 (36.2)
30. Children learn all their language by copying what they have heard adults say	26 (6.5)
31. When children have a cold, it is okay to give them regular aspirin	262 (65.5)
32. A 6 years old is able to ride a two-wheeled bicycle	271 (67.8)
33. Some normal kids do not enjoy being cuddled	189 (47.2)
34. The average 5 years old can tie his (her) shoelaces	222 (55.5)
35. The more you soothe a crying baby by holding and talking to it, the more you spoil them	230 (57.5)
36. A common accident for toddlers is pulling something like a frying pan, a tablecloth, or a lamp down on top of them	336 (84.0)
37. A 4 year old who sees a short-haired girl in overalls is likely to say she is a boy	245 (61.2)
38. A good way to teach your child not to bite is to bite back	295 (73.8)
39. Some days you need to discipline your child; other days you can ignore the same thing. It all depends on the mood you are in that day	186 (46.5)

providers. Most services in Primary Healthcare Centers (PHCs), focus on checking growth parameters, vaccinations, and general health-related issues such as feeding, constipation, and dietary problems.^[14] This underlines the overall limited maternal knowledge of our population. Health and safety subscale is a good example of such deficit in PHC role since it was the highest knowledgeable domain (63.4%) of mothers because of the role PHC providers play in addressing such general health-related topics. This observation has also been made by another Arab study.^[16] Moreover, basic safety and physical health topics such as vaccination and nutrition are occasionally well-addressed on various media platforms. Some international studies have reported that although most pediatricians cover basic health maintenance issues, other aspects of childrearing and development education are largely overlooked.^[27,28]

Parity was the most significant factor that limited maternal knowledge in general principles and milestones subscales which make up almost two-thirds of the inventory items (39/58, 62.3%). Two-thirds of the mothers were first time mothers, so developmental milestones and parenting posed a great challenge since these skills evolve with increasing parity. This seems to explain the limited overall knowledge on childrearing and developmental milestones in our cohort. Furthermore, most of the correct answers were related to children above the age of 2 years, which underscores the lack of knowledge relating to younger

Table 3: Saudi mothers' knowledge about child developmental milestones

Items with numbers	Correct answers N (%)
40. Most 6-year-olds can write a complete sentence	101 (25.2)
41. A 5 years old can read four or more words	89 (22.2)
42. The average 4 years old can get dressed and undressed without help	85 (21.2)
43. 5 years olds use plurals correctly - for example, says "men" not "mans," "mice" not "mouses," etc.	215 (53.8)
44. Most children are ready to be toilet trained by the age of one	349 (87.2)
45. Most 3 years olds can put their shoes on the correct feet	176 (44.0)
46. Babies usually say their first real word at 6 months	202 (50.5)
47. By 3 years of age, most children have a favorite playmate	307 (76.8)
48. 3 years olds usually say, "I'm sorry" when they do something wrong	281 (70.2)
49. It is not until 4 years of age that kids begin to tease other children	210 (52.5)
50. 18-month-olds often cooperate and share when they play together	128 (32.0)
51. Most 2 years olds know the difference between make-believe and true stories on TV	321 (80.2)
52. 2 year olds are able to reason logically, much like an adult would	317 (79.2)
53. 1-year-old child knows right from wrong	319 (79.8)
54. A 6-month-old baby knows what "no" means	233 (58.2)
55. 3 year olds know their left hand from the right hand	149 (37.2)
56. By 3 years of age, most children will dress up in their parent's old clothes and play act	102 (25.5)
57. Most 6-year-olds can add numbers together up to 10, such as 2+2, 3+5, etc.	295 (73.8)
58. By 2 years, children left on their own have the sense not to do something dangerous, like poking a finger in a socket	59 (14.8)

Questions=40–46: Physical, 47–50: Emotional, 51–58: Cognitive

Table 4: Knowledge of infant developmental inventory tool (KIDI) summary scores

Item	n	Mean	SD
Attempted	400	0.91	0.113
Accuracy	400	0.59	0.090
Total	400	0.54	0.103

SD=Standard deviation

children. It is noteworthy that, developmental milestones of 4–6 years are influenced by a lot of factors including cultural values, so there are no clear-cut age ranges for which these milestones acquired may be specified for all populations. This clarification is necessary because almost 40% of our cohort were mothers of children aged

more than 4 years, and the knowledge instrument used was not Arab based.

We found that most of the participants did not have adequate knowledge about basic parent–infant bonding norms. The reason could be that most Saudi and other Arab mothers have some firm beliefs on some aspects of parenting passed on from generation to generation. One of these erroneous beliefs is that picking up children to comfort and sooth spoils them. This finding accords with the report by Silva *et al.*, that mothers' knowledge on childrearing is associated with the beliefs of the parents.^[29] Therefore, such misconceptions should be pointed out by health-care providers to mothers and also instructed that emotional and psychological demands of a child are just as crucial as health-related needs.

About half of the participants were knowledgeable about their children's developmental milestones. This finding is lower than the result of other studies (51.8% vs. 79%).^[16] This could be due to the inclusion of children up to the age of 6 years in our study in contrast to infants only, which may reveal additional deficits in maternal knowledge when older age ranges are involved. Furthermore, knowledge of the emotional aspect of child development recorded the highest percentage in our cohort, whereas their knowledge of physical developmental skills was the least recognized.

In our study, we found that mothers' knowledge on parenting, health and safety, principles, and milestones were affected by multiple risk factors. For example, mothers' age and education, husband's education, and planned pregnancies affected mother's knowledge of parenting, whereas parental education, parity, and age of child increased the chance of reducing knowledge of general principles. In addition, mothers' knowledge of milestones was affected by parity, husband's age, and planned pregnancies. The involvement of husbands' age is comprehensible since older men bond less with their children because of their minimal hands-on participation in child rearing. Moreover, the relation between planned pregnancies and mothers' knowledge about child development highlights the importance of better preparation and parental interest.

Various international reports contradict our findings since they found no relation between physical, emotional, and cognitive developmental skills and parental age, education, and parity.^[14,16,19,26] MacPhee stated that older mothers have higher knowledge scores compared to adolescent mothers.^[25] These comparisons were not investigated in our study. Furthermore, a few studies have found that parents with higher education are more knowledgeable of child development, which is consistent with our findings.^[22,30] In our cohort, receiving assistance

Table 5: Relation of demographics to knowledge of infant developmental inventory tool subscales

Variable	Number (%)	Parenting		Health and safety		Principles		Milestones	
		Mean (SD)	P-value	Mean (SD)	P-value	Mean (SD)	P-value	Mean (SD)	P-value
Mothers' age									
18-27	125 (31.2)	0.54 (0.18)	0.001	0.63 (0.48)	0.135	0.56 (0.17)	0.317	0.51 (0.13)	0.054
28-35	169 (42.2)								
36-50	106 (26.5)								
Mothers' education									
>12 years	103 (25.8)	0.52 (0.18)	0.015	0.62 (0.15)	0.065	0.55 (0.17)	0.002	0.51 (0.12)	0.139
Diploma	54 (13.5)								
University	243 (60.8)								
Mothers' work status									
Working	171 (42.8)	0.53 (0.19)	0.947	0.63 (0.16)	0.823	0.56 (0.17)	0.212	0.51 (0.13)	0.153
Not working	229 (57.2)								
Parity (baby)									
1	285 (71.2)	0.53 (0.19)	0.356	0.628 (0.15)	0.081	0.55 (0.17)	0.020	0.5 (0.12)	0.008
>1	115 (28.8)								
Husbands' age									
20-30	72 (18.0)	0.534 (0.19)	0.391	0.625 (0.16)	0.061	0.55 (0.17)	0.249	0.5 (0.13)	0.037
31-40	208 (52.0)								
41-60	120 (30.0)								
Husbands' education									
>12 years	84 (21.0)	0.52 (0.18)	0.007	0.63 (0.16)	0.163	0.55 (0.17)	0.001	0.51 (0.12)	0.979
Diploma	84 (21.0)								
University	232 (58.0)								
Age of the child (years)									
<1	77 (19.2)	0.53 (0.19)	0.648	0.63 (0.16)	0.720	0.55 (0.17)	0.023	0.51 (0.12)	0.223
1-2	61 (15.2)								
2-3	71 (17.8)								
3-4	32 (8.0)								
4-5	54 (13.5)								
>5	105 (26.2)								
Planned pregnancy									
Yes	239 (59.8)	0.53 (0.19)	0.044	0.63 (0.16)	0.976	0.56 (0.17)	0.455	0.51 (0.12)	0.042
No	161 (40.2)								
Receive assistance with baby care									
Yes	278 (69.5)	0.52 (0.19)	0.281	0.63 (0.16)	0.641	0.55 (0.18)	0.442	0.51 (0.13)	0.148
No	122 (30.5)								
Source of assistance (278)									
Mother	158 (56.8)	0.52 (0.18)	0.621	0.61 (0.15)	0.029	0.55 (0.16)	0.108	0.51 (0.13)	0.545
Mother-in-law	34 (12.2)								
Husband	76 (27.3)								
Neighbor	10 (3.6)								

SD=Standard deviation

and the source of assistance had no relation to the degree of mothers' knowledge. However, grandmothers and mothers-in-law were the most frequently reported sources of assistance to our participants. This finding reflects the predominant existence of informal education versus formally structured education provided by health caregivers. This result is consistent with that of previous study which stated that most mothers make use of informal sources of education on early infancy.^[31] In addition, it is important to highlight the cultural dependence on house

help and nannies in the Saudi homes and the effect of such attitudes on parenting and children monitoring.

This study has some limitations. Although cross-sectional studies may establish association, they lack the ability to develop causality. Furthermore, questionnaires in general are subject to various degrees of retrieval bias as well as social acceptance and desirability. However, we tried our best to minimize this bias with face-to-face interviews and minimize

personal demographic data extraction. The study recruited Saudi mothers from the Eastern Province of Saudi Arabia, so our findings may not be generalized. However, our study included children up to the age of 6 years, making it the first comprehensive study of mothers' knowledge on childrearing and development in the Arab world.

Conclusion

Saudi mothers have limited overall knowledge on childrearing and developmental milestones of their children. Multiple factors such as mothers' age, parental education, parity, and planned pregnancies had a positive effect on mothers' knowledge of parenting and milestones parameters. The concept of planned pregnancies should be promoted for better preparation for parenting. A more responsible role should be adopted by health-care providers to educate mothers about various safety, parenting, and development topics besides health-related issues. Nation-wide support and training initiatives for the development and certitude of parental competencies in childrearing and parenting are advised.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

- Haith MM, Benson JB. Encyclopedia of Infant and Early Childhood Development. Vol. 1-3. Philadelphia, PA: Elsevier Inc.; 2008. p. 1-2200.
- Blindcanadians.ca. International Corner UNICEF & Disabled Children and Youths (ICUDCY) [updated 2003 June; cited 2021 August]. Available from: <http://www.blindcanadians.ca/publications/cbm/17/international-corner-unicef-disabled-children-and-youths>.
- Huang K, O'Brien Caughy M, Genevro L, Miller L. Maternal knowledge of child development and quality of parenting among white, African-American and Hispanic mothers. *J Appl Dev Psychol* 2005;26:149-70.
- Benasich AA, Brooks-Gunn J. Maternal attitudes and knowledge of child-rearing: Associations with family and child outcomes. *Child Dev* 1996;67:1186-205.
- Reich S. What do mothers know? Maternal knowledge of child development. *Infant Ment Health J* 2005;26:143-56.
- Morrison GS. Parent Involvement in the Home, School and Community. OH: Chas E Merrill Publishing Company; 1978.
- Reiner Hess C, Teti DM, Hussey-Gardner B. Self-efficacy and parenting of high-risk infants: The moderating role of parent knowledge of infant development. *J Appl Dev Psychol* 2004;25:423-37.
- Goodnow JJ. Parents' ideas, actions, and feelings: Models and methods from developmental and social psychology. *Child Dev* 1988;59:286-320.
- Sigel IE. The belief-behaviour connection: A resolvable dilemma? In: Sigel IE, McGillicuddy-Delisi AV, Goodnow JJ, editors. Parental Belief Systems: The Psychological Consequences of for Children. Hillsdale, NJ: Erlbaum; 1992. p. 443-56.
- Landry SH, Smith KE, Swank PR. Responsive parenting: Establishing early foundations for social, communication, and independent problem-solving skills. *Dev Psychol* 2006;42:627-42.
- Al-Khazrajy L, Salah Aldeen E. Assessment of mothers knowledge regarding the developmental milestone among children under two years in Iraq. *Am J Appl Sci* 2017;14:869-77.
- Jahromi LB, Guimond AB, Umaña-Taylor AJ, Updegraff KA, Toomey RB. Family context, Mexican-origin adolescent mothers' parenting knowledge, and children's subsequent developmental outcomes. *Child Dev* 2014;85:593-609.
- Teti DM, Gelfand DM. Behavioral competence among mothers of infants in the first year: The meditational role of maternal self-efficacy. *Child Dev* 1991;62:918-29.
- Al-Ayed IH. Mothers' knowledge of child health matters: Are we doing enough? *J Family Community Med* 2010;17:22-8.
- Al-Hassan SM, Lansford JE. Evaluation of the better parenting programme in Jordan. *Early Child Dev Care* 2011;181:587-98.
- Safadi RR, Ahmad M, Nassar OS, Alashhab SA, AbdelKader R, Amre HM. Jordanian mothers' knowledge of infants' childrearing and developmental milestones. *Int Nurs Rev* 2016;63:50-9.
- Moawed SA, Saeed AA. Knowledge and practices of mothers about infants' diarrheal episodes. *Saudi Med J* 2000;21:1147-51.
- Shawky S, Milaat WM, Abalkhail BA, Soliman NK. Effect of maternal education on the rate of childhood handicap. *Saudi Med J* 2001;22:39-43.
- Jarrah S, Safadi R, Al-Ashhab S. Jordanian mothers' caring practices of infants' health problems in the postpartum period. *Arch Sci* 2012;65:461-83.
- Halgunseith LC, Ispa JM, Csizmadia A, Thornburg KR. Relations among maternal racial identity, maternal parenting behaviour, and child outcomes in low-income, urban, black families. *J Black Psychol* 2005;31:418-40.
- Carra C, Lavelli M, Keller H, Kaertner J. Parenting infants: Socialization goals and behaviours of Italian mothers and immigrant mothers from West Africa. *J Cross Cult Psychol* 2013;44:1304-20.
- Ertem IO, Atay G, Dogan DG, Bayhan A, Bingoler BE, Gok CG, et al. Mother's knowledge of young child development in a developing country. *Child Care Health Dev* 2007;1:728-37.
- Dean AG, Sullivan KM, Soe MM. OpenEpi: Open Source Epidemiologic Statistics for Public Health, Version. Available from: <http://www.OpenEpi.com>. [Last updated on 2013 Apr 06; Last accessed on 2020 Apr 05].
- MacPhee D. Manual: Knowledge of infant development inventory. Unpublished manuscript, University of North Carolina. 1981.
- MacPhee D. Manual: Knowledge of Infant Development Inventory. Fort Collins, CO: Colorado State University; 2002.
- Nobre-Lima L, Vale-Dias ML, Mendes T, Mónico L, MacPhee D. The Portuguese version of the knowledge of infant development inventory-P (KIDI-P). *Eur J Dev Psychol* 2014;11:740-5.
- Bornstein MH, Cote LR. 'Who is sitting across from me?' Immigrant mothers' knowledge of parenting and children's development. *Pediatrics* 2004;114:e557-64.
- Thomas S, Vijayakumar C, Siva R, Isaac R. Parenting children under three years of age in a south Indian setting. *Pediatr Nurs* 2007;33:421-6.
- Silva AK, Vieira ML, de Moura ML, Ribas RC Jr. Primiparous mothers' knowledge about child development: A study in Itajaí, SC. *J Hum Growth Dev* 2005;15:1-10.
- Bornstein MH, Cote LR, Haynes OM, Hahn CS, Park Y. Parenting knowledge: Experiential and sociodemographic factors in European American mothers of young children. *Dev Psychol* 2010;46:1677-93.
- Sink KK. Seeking newborn information as a resource for maternal support. *J Perinat Educ* 2009;18:30-8.