

Bahraini Females Knowledge about Developmental Delay in Children: A Cross Sectional Study

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ABSTRACT

Guidelines for normal child development had been constructed by studying patterns of growth and development. They included physical, socio-emotional, cognitive and motor development in relation to age. The aim of this study was to provide a statistical data regarding knowledge of milestones in Bahraini females and their awareness of delayed milestones complication. This cross-sectional study was conducted from the period of 6th of November 2018 until January 2019. Bahraini females older than 18 years of age (n=628) were selected randomly. Each participant had to fill a specific questionnaire which included questions to identify the level of knowledge about the milestones and if they are able to identify abnormal behavior. The results showed that 93.94% of the population has failed to answer 53% of the survey correctly, leaving only 6.06% of the population completing the survey with correct answers exceeding the cut-off point. This exhibited the lack of knowledge towards developmental milestones and the complications that arise due to their delay. We concluded that Bahraini females lack the knowledge of developmental milestones and the complications of this lack on early detection of diseases in their babies. This showed that developmental milestones were mistakenly not taken seriously and were underestimated.

Keywords

Bahraini females, Knowledge, Developmental delay, Cross-sectional study, Milestones.

Key findings:

1. Bahraini females are generally lacking the knowledge of child behavior and development. This makes them unable to detect any abnormality in the growth of their children.
2. The majority of the questioned females did not know that diseases in infants and children can be early detected through knowing their developmental behavior. This makes these females even not caring about this knowledge deficit.
3. The majority of the mothers stated that they followed the growth of their children with the caring doctors. This means that they did not get any knowledge from their doctors, or they were not interested in getting the knowledge.

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1. INTRODUCTION:

Developmental milestones were theoretical milestones of child development. Milestones defied the normal and recognized pattern of development that children were expected to follow. They included physical, socio-emotional, cognitive and motor development. All ages and ranges were variable since many children reach some or most of these milestones at different times based on variations in many factors.

Minor or temporary delays were usually not a concern, but ongoing or multiple delays in reaching milestones may led to issues in later life (Di Rosa et al., 2016)(Murray et al., 2007). Causes and risk factors of developmental delay included autism spectrum disorders (ASDs), cerebral palsy, fetal alcohol spectrum disorders, myopathies such as muscular dystrophies and genetic disorders such as Down syndrome and fragile X syndrome (Oberklaid and Efron, 2005).

Guidelines for normal child development had been constructed by studying patterns of growth and development. However, each child developed in a unique way, and so using the guidelines helped in understanding these general patterns of development. The World Health Organization (WHO) guidelines for gross motor milestones state that sitting without support was normally achieved within four to nine months, standing with assistance and crawling were normally achieved within five to eleven and a half months and five to thirteen months respectively. It was also indicated that walking with assistance was normally achieved within six months to fourteen months, standing alone was normally achieved within six and a half and sixteen months, while walking alone was normally achieved within eight to seventeen months (De Onis, 2006a). This criteria was

81.1% applicable world-wide according to *Acta Paediatrica* journal (De Onis, 2006b).

Delayed in reaching language, thinking and motor skills milestones were called developmental delay. Identification of delayed developmental milestones was very crucial, the longer the failure of identification goes on, the more aggressive and progressive the cause might get.

The awareness of developmental milestones was of utmost priority and the early detection of milestones delay can made a significant improvement of the outcome. According to centers of disease control and prevention (CDC) in the United States of America (USA) in 2007, parents of only 21.1% of children aged 10-47 months reported that they had been asked about their child's developmental milestones (Rice et al., 2014). This showed that there was insufficient effort towards the developmental milestones screening.

The *International Journal of Current Research* showed that 53% of mothers had good knowledge and 12% of mothers were below average score regarding developmental milestones indicated that mothers need to be more aware about developmental milestones (David et al., 2014).

Moreover, *Pakistan pediatric journal* revealed that knowledge of majority of the mothers was only based on informal experiences. Only 3.57% of mothers claimed that their source of knowledge about child development was formal education/experiences, which indicated that there was no sufficient formal educational awareness of developmental milestones (Rehman and Farrukh Munir, 2016).

Poor knowledge regarding the developmental milestones had been evident to result in serious complications. As in Turkey, a study revealed

that mothers did not know that sight, vocalization, social smiling and overall brain development begin very early in life or that they should began to talk to their children early (Ertem et al., 2007).

The estimated Global developmental delay was 7.1% of the children with the maximum delay was observed in the 0–12 months age group (7.0%) (Sachdeva et al., 2010). This result showed that developmental delay had a high prevalence and children between the ages 0-12 months need close observation. According to a study conducted in Egypt, the highest rate of suspected developmental delay (SDD) was in problem solving (3%), followed by communication (2.4%), fine motor skills (2.2%) and social–personal domain (1%), with no SDD in gross motor skills. SDD was more commonly observed in boys (Abo El Elella et al., 2017).

The outcome of developmental delay could indicate some certain disabilities. In a study of the journal of family practice, it was shown that speech and language impairment were common among children by a prevalence of 6%, learning disabilities (8%), attention deficit disorder (7%). Less common conditions included mental retardation (1%-2%), autism spectrum disorders (0.5%), and cerebral palsy (0.2%) (S, 2006).

The aim of this study was to provide a statistical data regarding maternal knowledge of milestones in Bahrain and their awareness of delayed milestones complication.

2. MATERIALS AND METHODS:

The research was conducted in Bahrain from the period of 6th of November 2018 until January 2019. For this study, we collected data from Bahraini married females that were older than eighteen years old regarding their knowledge of the developmental milestones of babies. A simple random sampling technique

had been used; where the females in the study had been selected randomly and each female had an equal chance to be part of the study. This sample technique suited the study, because the population included in the study is highly homogenous. The sample size for the study was 600 females because according to the Supreme Counsel for Woman in Bahrain, in 2015 the total number of Bahraini Citizens was 630,744 from which 49% were Females (Supreme Council for women, 2015).

Therefore, the total number of female Bahraini citizens was 309,064. However, for this study we specified that the population age would be older than eighteen years which according to the distribution of the Bahraini population based on age and gender constitutes for 58.91% of the female population which would be 182,095 females (World Factbook, 2018) and we chose 0.34% of that number to be our sample size. A specific survey form for this study was published online (Appendix 1). The link to answer the survey was distributed on various social network platforms which are Twitter, Instagram, and WhatsApp. The applicants were be required to answer the questions that were on the survey depending on their knowledge. The collected data would identify the level of knowledge the population had about the milestones and the ability to identify abnormal behavior seen by their children. The data was analyzed and compared with other populations. The type of study chosen was cross-sectional. The data was entered and analyzed using the Statistical Package for the Social Sciences (SPSS), version 23. The Chi-square test was used to detect differences in maternal knowledge about the developmental milestones in categorical variables. The survey included 15 questions to determine the overall maternal knowledge of developmental milestones. Participants who answered 53% or more of the questions, which equaled to 8 or more questions

had been considered to pass the study and had overall knowledge of developmental milestones. The Research and Ethics Committee at the College of Medicine and Medical Services (CMMS) in the Arabian Gulf University (AGU) approved this study, and the purpose of the study was made clear to the participants and ensured that the information given by them would be kept confidential and be used purely for research purposes.

3. STATISTICAL ANALYSIS:

Data was presented as differences between the groups and are measured by chi-square.

4. RESULTS:

The study included 578 Bahraini females categorized according to their age. The largest age group was 30 to 39 years old being 190 participants which representing 32.87% of the study population, while the smallest age group was 50 years and over being 123 participants representing 21.28% of the study population, as shown in figure 1. Only 6.06% of the population (35 participants) passed the study and answered 53% or more of the questions, as shown in figure 2 and there was a significant relation between participants score and their age ($P \leq 0.05$) according to Chi-square test. Score in relation to each age group is demonstrated in figure 3, where the most knowledgeable participants were aged between 40 and 49 years old demonstrated by 11.7% of the population, who are 15 participants. However, the group with the least knowledge was among 50 years or older demonstrated by 4.1% of all participants who are five participants. Participants in the age group of 19 to 29 years old showed the second highest knowledge with 6.6% of the population, who are 9 participants. Age group of 30 to 39 years old came second to last with just 6

participants exhibiting knowledge. The number and the percentage of participants who passed ($n=35$) according to number of children, educational level and medical field workers are shown in table 1. Results showed that mothers with two or more children had more experience in developmental milestones being 68.6% of the participants who have passed. In relation to educational level, the majority of the participants who passed were with university education being 82.9%, while participants of the primary or middle school education had the least percentage of passing participants being only 2.9%. However, in relation to working in medical field, 14.3% of the participants who passed worked in the medical field, while 85.17% did not work in medical field. This showed that there was a significant unawareness of the developmental milestones. Figure 4 showed the number of mothers that routinely followed up their children with doctors during their development. 82.18% of the mothers followed up their children with doctors, however there is 6.06% of Bahraini females who did not follow up their children with doctors. 11.76% of mothers had no children. Maternal awareness of the complications arising from developmental delay was also studied, only 63.7% of the participants were aware and 36.3% lack awareness, as shown in figure 5. 77.51% of the participants did not hear about any local campaign regarding developmental milestone awareness, as displayed in figure 6. All the study questions that were used to determine the knowledge regarding the milestones and the percentage of the participants who answered them correctly could be seen in figure 7. The knowledge regarding the crawling and walking was the highest being 90.5% and 90.1% respectively while the knowledge regarding the color recognition was the least being 2.9% only.

Figure 1: Study participants divided in different age groups. The largest age group was (30-39), while the smallest age group was (50 and over)

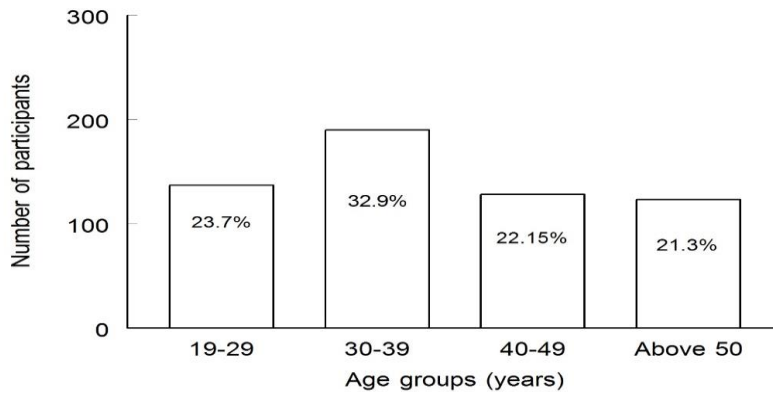


Figure 2: Participants who answered 53% or more of the questions. Only 6.06% of them passed in the study, while 93.94% failed

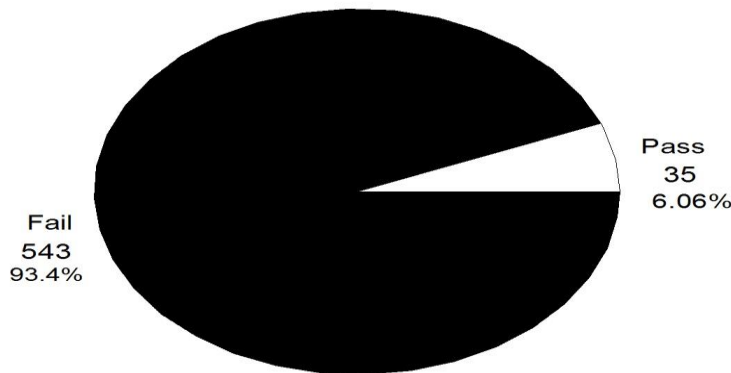


Figure 3: Score in relation to age groups. There was significant relation between participants score and their age. The highest failure score was in the age group (30-39) being 96.8%

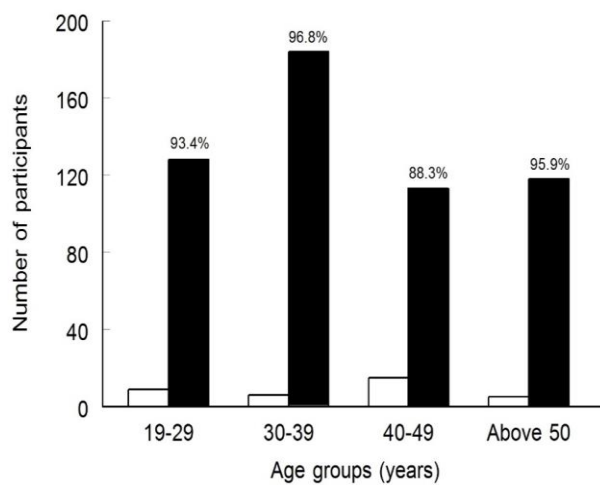


Figure 4: Number of children followed up routinely with doctors. 82.18% of the mothers followed up their children with doctors, however there is 6,06% of Bahraini females who didn't follow up their children with doctors

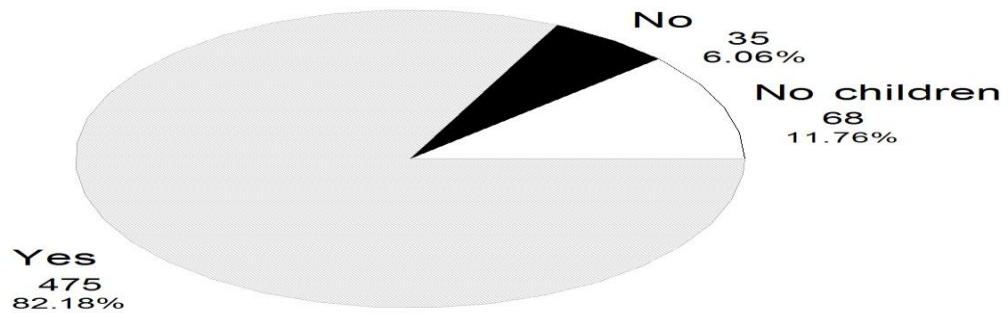


Figure 5: participants' awareness of developmental delay complications. 63.7% of the participants were aware and 36.3% lack awareness.

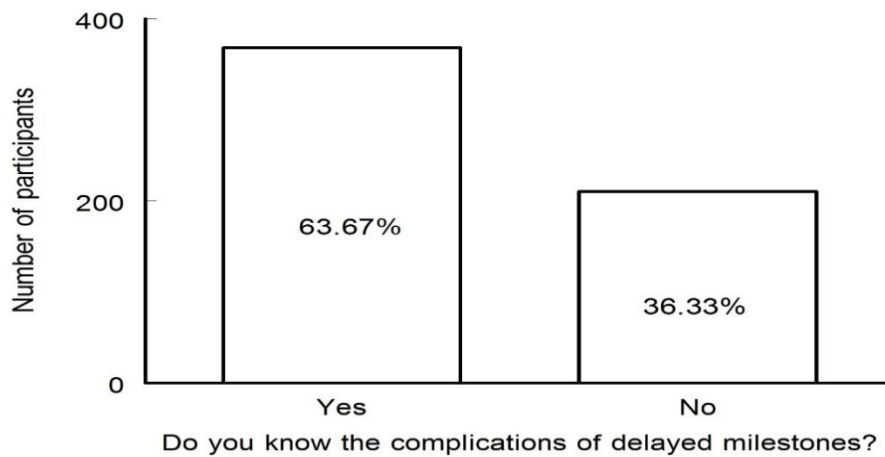


Figure 6: participants who heard about local developmental milestones campaign. The majority of participants didn't hear about any local developmental delay awareness campaign.

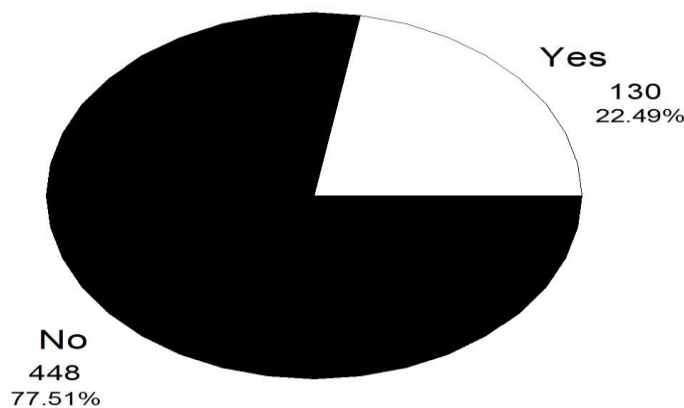
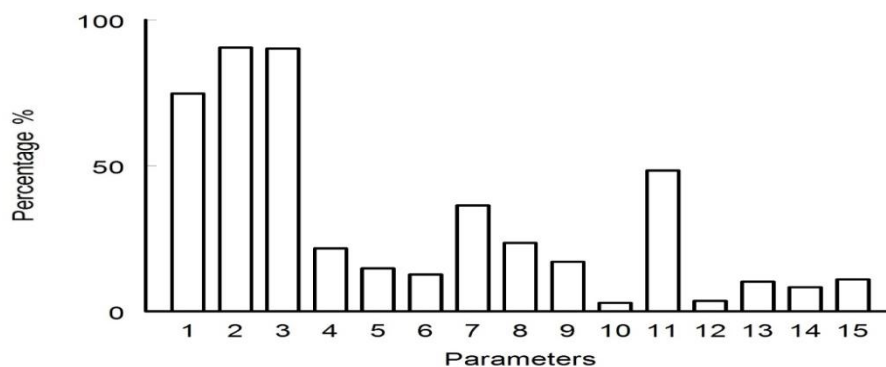


Figure 7: percentage of the participants who answered the study questions of milestones correctly. The Knowledge regarding the crawling and walking was the highest being 90.5% and 90.1% respectively, and the knowledge regarding the color recognition was the least being 2.9% only.



Variable		Number	Percentage (%)
Number of children (n=35)	Non	6	17.1
	One	5	14.3
	Two or more	24	68.6
Educational level (n=35)	Primary or middle school	1	2.9
	High school	5	14.3
	University	29	82.9
medical field workers (n=35)	Yes	5	14.3
	No	30	85.17

Table 1: Passing participant's according to education level, number of children and whether a medical field worker

5. DISCUSSION AND CONCLUSION:

Developmental Delay was most often a diagnosis made by a doctor based on strict guidelines. Usually, though, the parents were the first to notice that their child was not progressing at the same rate as other children the same age especially in the first three years of a child's life when there was an amazing time of development (Mackrides and Ryherd, 2011). Therefore, mothers may share early diagnosis of a developmental delay if they had enough knowledge. According to this study, which included 578 Bahraini females divided in different age groups, most of answered questions did not have enough knowledge

regarding developmental milestones. The majority of participants were between the age group 30 to 39 years old, which represented 32.87%, while the least age group was 50 and above years old represented 21.28% of the population. The other age groups between 19 to 29, and 40 to 49 represented 23.70%, and 22.15% respectively.

The percentage of population who passed the study by answering 53% or more of the questions correctly was only 6.06% (35 participants) which indicated insufficient knowledge. This result confirmed that there was lack of awareness regarding developmental milestones. Moreover, this may indicate that

there was poor awareness activities and little attention to teach mothers about developmental milestones by primary health care and inability to prepare official awareness programs. This result resembled the data that was reported in Pakistan that showed that only 3.57% of mothers took their knowledge from educational and formal sources. In the United State of America, 21.1% of parents lacked the experience of developmental milestones screening for their child. On the other hand, primary health centers in Bahrain screen the children for developmental milestones every visit for taking vaccinations, which played a good role to detect any delay, but they may not educate the mothers about developmental milestones and their importance due to a limited time for each child.

The participants between age 40 and 49 years old had the highest knowledge between the other age groups which were 15 (11.7%), while the least knowledge were the age group 30 to 39 years old which were 6 (3.2%), the other age groups 19 to 29 years old and 50 year and above were 9 (6.6%) and 5 (4.1%) respectively. This data indicates that middle-aged women may have learned practically these milestones during her experience with her/ or her relatives children and retained these informations. It is clear that there is correlation between age and score proven by the Chi-squared test which had a p-value result of 0.012 (>0.05).

Answering the tests correctly by the 35 participants was significantly correlated to the number of children they had and their educational level. Those who had two or more children had the highest percentage of success (68.6%) compared to those who had no children (only 17.1%) or only one child (14.3%). This result reported that mothers with more children had more exposure to developmental milestones and thus more knowledge.

In addition, there was a relation between the knowledge of developmental milestones and the education. The highest educational level, the better knowledge about children development. The data in this study shows that only 1 participant (2.9%) from primary or middle school educational level passed successfully the test, while this percentage increased to 5 (14.3%) in participants who had high school educational level. The highest percentage of success was among university educational level, which was 24 (82.9%). This indicates that the level of education affects the knowledge of developmental milestones. There was no significant correlation between the knowledge of developmental milestones and working in the medical field. According to the results, it was found that only 5 (14.3%) of medical workers had passed, whereas 30 (85.17%) of non-medical field workers passed as well.

The majority of mothers (475) followed-up their children with doctors during their growth and development, which reflect the awareness of the mothers about the importance of follow-up and its effect on children health state. Although there were multiple visits of mothers to the doctors regarding the follow-up of their children, there was deficiency in their knowledge about developmental milestones. This may indicate that the doctors were not aware to teach the mothers about these informations or explaining to this the importance of knowing them. Staff members in (Head Start) and other early childhood education programs in the United States rarely had the time, and may lack the technical training, to review and compare complex psychometric information on the quality of assessment and developmental screening tools (Halle et al., 2011). In addition, the physicians themselves may not receive the training that would prepare them to give advice on child

development and parenting (Rhoades et al., 2007).

It was shown in previous studies that there were certain disabilities resulted from delay of developmental milestones such as learning disabilities and attention deficit disorder. In this study, 63.7% of mothers knew that detection of delayed or abnormal milestone in children might help to detect these diseases earlier.

The majority of participants had a better knowledge about the time when a child starts crawling and walking. Respectively, about 90.5% and 90.1% of the participants were answering correctly concerning these two parameters. This indicated that mothers may had good knowledge about the most observable and general developmental milestones. In addition, 74.7% of the population had knowledge of rolling over which confirmed this observation. However, the least knowledge of participants (2.9%) was in the time the child starts to recognize colors. Similarly, 3.6% of the participants had knowledge about enjoying mirror playing and 8.3% as for going to the toilet alone. Reich. S (2005) reported that mothers lacked the most knowledge about infant sleep patterns and also the developmental ability that a 6-month-old infants has (Reich, 2005). This indicated that mothers lack the knowledge about unnoticeable developmental milestones. Moreover, this demonstrates that the primary health care doctors were not keen to increase the awareness of mothers towards child's growth progress and the developmental milestones. Generally, parents were usually more aware of norms for gross motor milestones, such as walking independently, than for other parameters and patterns of normal speech, language acquisition, and play skills (Bellman M, Byrne O, 2013)(Cole and Ball, 2013).

In conclusion Bahraini adult females are significantly ignorant of child's development

and timing of normal milestones. The lack of knowledge about the developmental milestones was probably due to lack of knowledge about the complications that arose as a cause of delay in them. This showed that developmental milestones were mistakenly not taken seriously and underestimated. Organization of workshops about children milestones may be encouraged for at least pregnant woman during their antenatal care visits to the health centers.

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Inset:

- 1- Rolling over.
- 2- Crawling.
- 3- Walking.
- 4- Holding the spoon.
- 5- Drawing a vertical line.
- 6- Transferring object from one hand to hand.
- 7- Saying one word (mama or baba).
- 8- Saying a sentence of 2 words (mama come).
- 9- Saying a sentence of 3 words.
- 10- Recognizing colors.
- 11- Drawing polygons.
- 12- Enjoying mirror playing (looking at himself in the mirror).
- 13- Waving as *bye*.
- 14- Going to toilet alone.
- 15- Dressing and undressing by himself.

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