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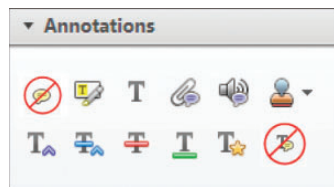
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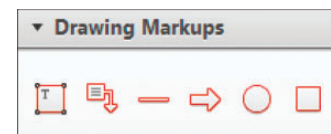
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# What Mothers Know About Child Development and Parenting in Qatar: Parenting Cognitions and Practices

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## Abstract

Maternal knowledge is important to parenting behaviors, children's development and well-being. Mothers' knowledge of child development has been shown to have a significant influence on the way mothers interact with their children and the learning opportunities they provide. This study was carried out to determine the level of maternal knowledge of child development and whether the level of knowledge varies by content area for mothers living in Qatar. The study also examined the relationship between maternal demographic characteristics and general and specific knowledge levels. The sample of mothers ( $N = 263$ ) completed the Knowledge of Infant Development Inventory (KIDI) together with the Catalog of Previous Experience with Infants (COPE). Findings indicated that mothers' knowledge about typical child deployment, developmental norms and milestones is poor. Implications in terms of parent education and clinical practice are discussed.

## Keywords

mothers' knowledge, child development, Qatar

There is a growing body of literature that stresses the importance of parenting cognitions in child development and rearing (Benasich & Brooks-Gunn, 1996; Miller, 1988; Stevens, 2012; Winter, Morawska, & Sanders, 2012). Research carried out in the last two decades or so on the cognitive aspects of parenting has clearly indicated that maternal cognitions such as beliefs, attitudes, and knowledge strongly influences how mothers interact with their children and construct the learning environment that is developmentally appropriate for them (Huang, O'Brien Caughy, Genevro, & Miller, 2005). Mothers' knowledge of child development has been found in a number of studies to be closely associated with positive child development outcomes (see Donnalley, 2013 for a review of the literature).

Maternal knowledge refers to the level of understanding that mothers have of child development processes, developmental milestones and norms, and caregiving skills (Huang et al., 2005). Maternal knowledge about child development, knowledge about developmental milestones, norms, principles, health and safety, and parenting strategies is essential to parenting behavior and child development. Knowledge of child development presents mothers with a sort of a road map that guides their everyday decisions about how to respond appropriately to the developmental needs of their children and monitor their behavior using effective caregiving and parenting skills (Bornstein, 2002).

## Theoretical Framework

Mothers' knowledge about child development has been shown in a number of studies to be important to child development

and parenting (Rikhy et al., 2010). Mothers who have higher levels of child development knowledge tend to show higher levels of parenting skills (Benasich & Brooks-Gunn, 1996; Huang et al., 2005). Mothers who have a better understanding of their children's abilities and capacities in different areas of functioning such as intellectual, language, emotional and social functioning, sensory, and motor abilities have been found to offer better quality learning environments and to respond with greater sensitivity to their children's needs (MacPhee, 1981, 1983; Miller, 1988).

Although a number of studies have recently been initiated to examine mothers' knowledge about child development in relation to cultural differences (Bornstein & Cote, 2003; Ertem et al., 2007; Reich, 2005; Ribas & Bornstein, 2005), they have focused, almost exclusively, on mothers in industrial countries such as the United States of America, the United Kingdom, or France. Fewer studies have been designed to specifically examine maternal knowledge about child development and rearing in Arab countries such as Qatar. In Qatar, little or nothing is known with regard to the level of knowledge that mothers possess about child development and parenting.

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### *Mothers' Demographic Characteristics and Knowledge of Child Development*

Mothers' knowledge of child development has been shown to have important implications for parenting behaviors, the development and well-being of children. Parenting programs designed to increase maternal knowledge and promote effective parenting practices produced positive developmental outcomes (Benasich & Brooks-Gunn, 1996; Dichtelmiller et al., 1992; Miller, 1988). Maternal knowledge of child development has been studied extensively over the past decades, and, in general, research has revealed strong positive relationships between knowledge of child development and the demographic characteristics of the mother (Benasich & Brooks-Gunn, 1996; Bornstein, Cote, Haynes, Hahn, & Park, 2010; Brooks-Gunn & Furstenberg, 1986; Reich, 2005; Richman, Miller, & LeVine, 1996; Roosa, 1983). The patterns of findings from these and other studies have shown that maternal knowledge is consistently associated with maternal age, education, socioeconomic status, occupational status, number of children, age of children, and culture (Bornstein et al., 2010; Ertem et al., 2007; Reich, 2005; Richman, Miller, & LeVine, 1992; Tamis-Lemonda, Chen, & Bornstein, 1998; Tamis-Lemonda, Shannon, & Spelmann, 2002). Older mothers were found to possess more knowledge about child development than younger ones, and high levels of maternal knowledge of child development tend to be associated with higher maternal education and higher socioeconomic status; variations, both within and between cultures, were consistently reported (Benasich & Brooks-Gunn, 1996; Bornstein et al., 2010; Dichtelmiller et al., 1992; Ertem et al., 2007). Other studies, however, reported mixed results regarding the influence of mother's age and number of children on parenting knowledge and practices (Conrad, Gross, Fogg, Ruchala, 1992; Dichtelmiller et al., 1992; MacPhee, 1981, 1983; Schilmoeller & Baranowski, 1985). Little is known about whether the level of parenting knowledge is related to marital status (married, divorced, or widowed). Thus, additional research may be needed to provide more insight into the role of marital status and other sociodemographic characteristics in relation to maternal knowledge of child development. Although we have found no studies to date that have been conducted on mothers' knowledge of child development in Qatar and other Arab countries, findings of recent research carried out in non-Western countries such as Turkey (e.g., Ertem et al., 2007) suggest that these studies can make a significant contribution to the understanding of the nature of maternal knowledge of child development and document sources of maternal knowledge in Arab countries, in general, and Qatar in particular.

### *Sources of Child Development Information and Maternal Knowledge*

Recent studies reveal no single source of information that mothers rely on to learn about child development and parenting (Bornstein et al., 2010; Golan et al., 2008). Previous research

has identified multiple possible sources of maternal knowledge about child development and rearing (Goodnow & Collins, 1990; MacPhee, 1981, 1983). In addition to relying on professional sources for information (McKim, 1987; Vukelich & Kliman, 1985), parents seek both family and friends to gain child development information (Belsky, Youngblade, & Pensky, 1989; Sistler & Gottfried, 1990). In non-Western countries, such as Qatar, resources about effective parenting practices tend to be scarce, and accurate information about child development processes is not readily available (Black, Eiser, & Krishnakumar, 2000; Richter, 2003).

### *Maternal Knowledge of Child Development in the Qatari Social-Cultural Context*

The social-cultural context of Qatari society has changed considerably over the past 40 years. Today, Qatar continues to experience economic, political, social, and educational advances that began in the 1970s. These advances and changes within society have had an impact on Qatari families (Al-Ghanim, 2013; Al-Maadadi, 1996).

The Qatari family has been transformed in many ways. For example, more fathers have become directly responsible for helping to raise children and provide them with guidance. Mothers, too, have acquired a new role and a differed social status due to their education and the independence of the nuclear family. The changes that have taken place in the Qatari society as a result of increased prosperity and education have created a need for women in the workplace (Al-Maadadi, 1996, p. 5).

As women began to enter the workforce, changes occurred not only in the traditional role and image of wife and mother but also in family structure and family dynamics as seen, for example, in the reduction in the number of children per family, as well as in the role of fathers (Al-Maadadi, 1996). Overtime, Qatari men have become engaged in more hands-on childcare and housemaids, and nannies are a more prominent fixture in most Qatari homes (Al-Maadadi, 1996; Khalifa, 2006). However, even though fathers' roles have changed and maids and nannies are more prominent, mothers are still expected to play the dominant role in child-rearing. These traditional roles in parenting, in a large part, are due to long-standing cultural traditions. For example, in Qatari society, fathers of young children are not allowed to be in the kindergarten classroom given that teachers of children this age are female and there is segregation between males and females. Thus, these types of cultural practices, in a large part, help to explain a number of the differences seen in the role of mothers and fathers both historically and today (Al-Maadadi, 1996).

The Qatari society has very much been "family focused" meaning family and family life have played a major role in the structure and function of Qatari society (Al-Ghanim, 2013). Given the importance placed on family, there is a concern that the changes that have taken place within the Qatari society

have or will have a negative effect on families in general and the role of mothers specifically. Research, in this area, however, is lacking; thus, the purpose of this study was to gain a greater understanding of mothers' knowledge about child development and parenting, as well as identify the major information sources and experiences that influence maternal knowledge. This seems especially prudent given the cultural expectations in regard to the role of mothers (Al-Ghanim, 2013) in concert with the well-documented association between mothers' knowledge of child development and positive child development outcomes (Donnalley, 2013). Gaining a greater understanding of maternal knowledge, or lack thereof, will facilitate more opportunities to provide effective community-based educational and supportive programs for parents and families. Further, addressing the needs of families more systematically very much supports the vision of Qatar. As stated in Qatar National Development Strategy 2011–2016 “child welfare and child protection” and “the adoption of a holistic approach to child well-being” is a major concern for the future of Qatar (pp. 17–18). As stated by the Emir of Qatar Sheikh Tamim Bin Hamad Al-Thani,

The National Strategy deepens our commitment to increasing the well-being of all Qatari citizens and lays out a carefully designed programme for how to continue providing the best education and healthcare as well as social protection and employment opportunities in a prosperous, stable and secure society that nurtures its members and preserves and protects family cohesion. (Qatar National Development Strategy 2011-2016, Forward)

This document, in concert with Qatar National Vision 2030, both strongly address the well-being of families and provide the vision that is currently guiding Qatar in planning for its future.

### Research Questions

Specifically, this study examined mothers' knowledge of child development while considering whether level of knowledge was influenced by the mothers' sociodemographic characteristics, such as age, education, number of children, age of children, occupation, marital status, and whether knowledge varied both globally and by developmental domain (assessing knowledge of developmental milestones and norms, developmental principles relevant to young children, parenting knowledge, and children's health and safety).

This study sought to answer the following questions:

- (a) What is the level of mothers' knowledge of child development in Qatar?
- (b) Does the level of mothers' knowledge of child development vary by developmental areas (developmental milestones and norms, developmental principles, parenting knowledge, and health and safety knowledge)?
- (c) Does maternal knowledge of child development vary by sociodemographic characteristics of the mother

(age, education, number of children, children's age, occupation, and marital status)?

- (d) Is there a relationship between previous experience with children and the level of maternal knowledge?
- (e) Where do parents, living in Qatar, learn about child development and parenting?

## Method

### Participants

In total, 263 mothers living in Qatar were recruited from local health centers, schools, social and cultural agencies, and one local university; these participants constituted a convenient sample. Prior to the initiation of the project, the researchers were granted ethical compliance approval from the College's ethical research compliance committee. Only recently has there been the establishment of an Ethical Board at a national level and at the university. In addition, field researchers verbally described the project to each mother, expressed their need for information, their respect for confidentiality and information privacy and waited for their agreement. Mothers who were willing to participate in this study were asked to respond to the questionnaire. A sample of mothers was also recruited through students in schools and at universities. Students at schools and universities were given a letter explaining the study along with and the questionnaire. The letter explained the confidentiality of the data and storage of the information and provided contact information.

It should be noted that in Qatari culture, the primary caregiver of young children is the mother; fathers play a more supportive parenting role when children are older. Thus, for this study, only mothers were asked to participate.

The demographic characteristics were collected using a specifically designed questionnaire (Al -Maadadi, 1996). Sociodemographic characteristics of the participants are displayed in Table 1. As can be seen, over 80% of the study sample were aged over 25 years of age, over 50% had college-level education, 95% were married, 73% had between 1 and 4 children, and 54% were employed. The study took place in Doha, the capital of Qatar. The large population mass in Qatar live in Doha. The current government initiative in recent years has been in the ability to settle a large part of the population that was previously nomadic in sedentary living around the capital.

### Procedure

Mothers completed the Knowledge of Infant Development Inventory (KIDI) and the Catalog of Previous Experience with Infants (COPE, MacPhee, 1981). The questionnaires required approximately 45 min to complete.

### Measures

**Knowledge of Infant Development Inventory.** The KIDI (MacPhee, 1981) is designed to assess individual knowledge of parental



**Table 1.** Descriptive Data Measures for Sample Sociodemographic Characteristics.

Sociodemographic Characteristics	N	%
<b>Maternal Age</b>		
25 years and under	48	18.3
26–30 years	71	27.0
31–35 years	58	22.1
36–40 years	44	16.7
Above 41 years	42	16.0
<b>Maternal Education</b>		
Reads and Writes	10	3.8
Primary	3	1.1
Middle School	10	3.8
High School	51	19.4
Undergraduate	170	64.6
Graduate	18	6.8
<b>Maternal marital Status</b>		
Married	250	95.1
Divorced	9	3.4
Widow	3	1.1
<b>Maternal Occupation</b>		
Employed	142	54.0
Unemployed	121	46.0
<b>Total Number of Children</b>		
1–4	194	73.8
5–8	64	24.3
9 and above	5	1.9

practices, developmental processes, and infant norms. The purpose of the instrument is to assess mothers' level of knowledge and understanding of effective parenting practices, health and safety measures, developmental norms and milestones, and developmental principles relevant to young children (up to age 3 years). The inventory contains 75 items, 48 of which ask participants to indicate whether they agree, disagree, or are unsure about a series of statements (e.g. "A two year old who is two or three months behind other two year olds is retarded [*sic*]"). Additional 20 items ask mothers to choose among 4 alternative answers to a statement about when a child should be able to achieve a particular milestone (e.g. "A baby is about 7 months old before he can reach for and grab things"). The remaining 7 items are either questions or sentence completions with 5 possible answers [e.g. The average newborn sleeps a total of (a) 22 hours a day, (b) 17 hours a day, (c) 12 hours a day, and (d) 7 hours a day]. The KIDI content categories consist of Milestones, Principle, Parenting, Health & Safety and Developmental Norms.

Because the KIDI is a knowledge test, responses to the KIDI are scored as incorrect (0) or correct (1). A correct score was computed for each item of the 75 items making up the KIDI.

The KIDI has been established to be a reliable and valid measure of parenting knowledge. Alpha reliability (internal consistency) ranged from 0.50 to 0.82 for parents, and the test-retest reliability coefficient ranges 0.80 to 0.92 (MacPhee, 1981). In the present study, the internal consistency of the inventory was relatively moderate, reaching 0.692.

*Catalog of Previous Experience with Infants.* The COPE (MacPhee, 1981) is an instrument that measures the exposure of individuals to information about infancy. Sixteen of the questions in the COPE are related to formal and informal experiences and information gained through direct observation. The COPE includes items concerning babysitting as a youth; high school and college classes on infant care and development; amount of time caring for one's own baby; and how much has been learned about infants from books, friends, relatives, profession, and spouse. The scoring on the items differed depending on the items. The COPE includes both multi-choice and scaled items. Item responses were similar to a rating scale where respondents rate from 1 = *Never*, 2 = *One or two times or An hour or so a month*, 3 = *More than twice but never regularly* or *Once a week for several hours a time*, and 4 = *Have been a regular activity—for several hours a time or Regularly*. Other items were rated on a 3-point scale as *None*, *One*", and *More than one*. For the purpose of this study, only those items concerned with parental experiences were assessed in relation to how those experiences influence mothers' knowledge about child development and rearing.

For validity purposes, a factor analysis was conducted using oblique rotation on the data to examine the pre-conceptualized structure of the COPE (Gorsuch, 1983). A total of 16 items were used in the factor analysis. The internal consistency estimates of reliability were computed for the extracted factors. The following 4 factors appeared: (a) the first factor was learned through resources; (b) the second factor through direct experience, i.e., babysitting; (c) the third factor was learned through professional experience; and (d) the fourth factor through learning experience from others. The four factors explained 45.81% of the variance and eigenvalues greater than 1 (Table 2 presents the factor loading and reliability scores).

These factors were pre-conceptualized and found by MacPhee (1981). Factor 1; learned through resources appeared to load on Factor 3 as reported in the manual (MacPhee, 1981). The second factor, direct experience appeared as Factor 1 in MacPhee. The third factor, professional experience appeared on Factor 5 in MacPhee, and the fourth factor learning experience appeared on Factor 2 in MacPhee. The four factors were correlated with the KIDI.

### Translation

The KIDI and COPE were translated into simple modern standard Arabic by a bilingual university professor who is familiar with the characteristics of both Western and Arabic cultures and has a degree in teaching Arabic to non-Arabic speakers. The parallelism between the two language versions was considered by the authors who were bilinguals, who then thoroughly revised this preliminary translation. Suitable revision and corrections were carried out according to the guidelines suggested by Hocevar and El-Zahhar (1985). The translated version was then back-translated into English by another bilingual person who is a professor in a university.

**Table 2.** Factor Loadings and Reliability Scores for COPE.

Items	Factors				Reliability
	1	2	3	4	
Learned from mass media	0.990				0.58
Learned from books	0.439				
Babysat other children		0.790			0.62
Baby siblings		0.617			
Parent education classes		0.477			0.49
Worked at daycare center			0.788		
Professional work			0.486		0.24
Learned from relatives				0.704	
Learned from friends				0.645	
Learned from observing babies				0.553	

Note. COPE: Catalogue of Previous Experience with Infants.

**Table 3.** Mean and Standard Deviations of Knowledge of Infants Development Inventory Scores for the Global Scale and by Content Area.

Knowledge	Mean	Standard Deviation	% correct
KIDI global score	38.89	6.844	51.85
Milestones	9.25	2.365	46.25
Principles	8.61	2.404	50.64
Parenting	7.55	2.111	62.91
Health and Safety	7.46	1.657	62.16
Norms	6.31	2.122	52.58

Note. KIDI = Knowledge of Infants Development Inventory.

For comparison, the back-translation was reviewed with the original English version. The back-translation method was used (Brislin, 1980).

Some modifications in wording of the Arabic version were proposed and carried out with the help of the back-translator, and an acceptable Arabic version was reached by the translators and researchers. This final modified Arabic version was deemed adequate in terms of a translated version of the original English inventory.

## Results

We computed the scores for both the full scale and the 5 subscales of the KIDI. A proportion score was computed for each participant, and then the percentage of correct answers was computed for all participants. A measure of the level of mothers' global knowledge was obtained by computing the proportion of total correct for all participants. Measures of five content knowledge areas were also computed. Specifically, these were developmental milestones, developmental norms, developmental principles, health and safety guidelines, and developmental norms.

Descriptive data for knowledge measures are presented in Table 3. The knowledge of child development measure (KIDI) had good internal consistency (Cronbach's alpha = 0.692).

## The Levels of Maternal Knowledge of Child Development in Qatar

The study results revealed that maternal knowledge about child development in Qatar was generally low. Overall, mothers correctly answered only 51.85% of the 75 questions making up the KIDI inventory. As can be seen in Table 4, in general, mothers were most lacking in knowledge about typical child development. They scored highest on parenting ( $M = 62.91$ ) and lowest on milestone knowledge ( $M = 46.25$ ). Their scores on the other sub-scales of the KIDI were as follows: health and safety knowledge,  $M = 62.16$ ; developmental norms,  $M = 52.28$ ; and developmental principles,  $M = 50.64$ .

## Relationship between Sociodemographic Characteristics and Maternal Knowledge of Child Development

Multivariate analyses of variance were carried out to determine whether the sociodemographic dependent variables such as age, education, occupation, number of children, children's age, and marital status had an effect on maternal knowledge of child development both globally and by subscale. The results obtained showed that mothers' age, number of children, occupation, and marital status were not significantly related to maternal knowledge of child development. Mothers' education, however, had a significant effect on the domain of child development principles  $F(5,258) = 2.575$ ,  $p < 0.02$ , but mothers' education had no effect on KIDI global knowledge score. Further, the study results showed that having children aged either three or five had a significant effect on mothers' knowledge level  $F(1,262) = 4.362$ ,  $p < 0.038$  or  $F(1, 262) = 6.570$ ,  $p < 0.01$ , respectively.

We also carried out multiple regression analyses to find out whether mothers' sociodemographic characteristics including mother's age, education, occupation, marital status, number of children, children's age, predicted mothers' knowledge level globally (KIDI global score) and/or by developmental domain. The results of the study revealed that only mothers' education emerged as a significant predictor of maternal knowledge ( $B = 0.274$ ,  $p < 0.0001$ ).

## Principal Sources of Maternal Knowledge of Child Development in Qatar

To answer the question concerning what parental experiences and sources of information influence the knowledge that mothers have about child development and rearing in Qatar, we conducted correlational analyses between COPE scores and KIDI global scores. As can be seen in Table 5, mothers' global knowledge is significantly correlated with parent education classes and direct experience ( $r = 0.200$ ,  $p < 0.01$ ), experiences gained by caring for young children. The analyses also showed that mothers learned knowledge about child development from sources such as books, magazines, and media ( $r = 0.155$ ,  $p < 0.05$ ).

**Table 4.** Knowledge of Infants Development Inventory Items that the Majority of Mothers Answered Incorrectly.

Statement	% Correct
<b>Developmental Milestones</b>	
A baby is about 7 months old before he (she) can reach for and grab things.	13
An infant will respond to his (her) name at 10 months.	11
A four month old lying on his (her) stomach can lift his (her) head.	04
Infants have depth perception by 6 months of age.	09
One year olds often cooperate and share when they play together.	31
An infant of 12 months can remember toys he (she) has watched being hidden.	33
A baby usually says his (her) first real word at 6 months.	34
<b>Parenting Practices</b>	
A baby should not be held when he (she) is fed because this will make the baby want to be held all of the time.	13
Taking care of the baby can leave the parent feeling tired, frustrated, or overwhelmed.	22
<b>Health and safety practice</b>	
Putting a soft pillow in the crib is a good, safe way to help the baby sleep better.	22
When a baby less than 12 months old gets diarrhea, the parent should stop feeding the baby solids and give a little sugar water or flat cola.	13

**Table 5.** Correlation between Experience and Knowledge for Mothers.

COPE	KIDI
Learned through Resources	0.155*
Direct Experience	0.200**
Professional Experience	0.067
Learning Experience	0.113

Note. COPE = The Catalog of Previous Experience with Infants.

KIDI = Knowledge of Infant Development Inventor.

\*\*Correlation is significant at the 0.01 level (two-tailed).

\*Correlation is significant at the 0.05 level (two-tailed).

## Discussion

Maternal knowledge is critical to parenting behavior, children's development, and well-being. Providing parents with information about child development and facilitating access to sources and resources about effective parenting and rearing practices has become a necessity (Bornstein et al., 2010; Huang et al., 2005; Reich, 2005). The present study was conducted to examine maternal knowledge of child development and parenting in Qatar and to see whether the level of mothers' knowledge about child development is related to mothers' individual sociodemographic characteristics including age, education, number of children, children's age, occupation, and marital status. Further, as previously stated, the study sought to identify the major information sources and experiences that influenced the level of maternal knowledge of child development and rearing in Qatar.

The results of our study show that the level of maternal knowledge of child development and rearing in Qatar is relatively low. On average, mothers correctly answered just over 51% of the questions. This is lower than what has been reported by some recent studies involving European American mothers, immigrant mothers, African American mothers, and low-income mothers (Bornstein et al., 2010; Bornstein & Cote, 2004; Ertem et al., 2007; Huang et al., 2005; Reich, 2005). In her study, Reich (2005) found that low-income

mothers correctly answered 65% of the criterion-referenced knowledge questions. A possible explanation for the present finding is that mothers in Qatar are offered few opportunities to gain information about developmental norms, milestones, and child development processes through professional work involving children, such as working at a daycare center, for example, or working in child health facilities that provide learning opportunities involving child development specialists. This has been confirmed by the results of the present study which showed no significant correlations between mothers' KIDI global score (level of maternal knowledge) and professional experience.

Mothers' knowledge about typical child development in the present study was, in general, low. The study results showed that mothers were especially lacking information about children's developmental milestones (46.25% correct) and, to some extent, developmental norms (52.28% correct). This lack of knowledge among mothers about developmental norms and milestone—understanding the child's typical behavior at a given point in time—may limit their ability to provide the learning environment that will promote their children's development and well-being because mothers who generally possess adequate knowledge about child development tend to adopt parenting behaviors that help regulate the child's behavior and shape his or her social emotional development (Benasich & Brooks-Gunn, 1996; Miller, 1988; Sigel, 1992; Smith, 2002). In contrast, mothers who lack the necessary knowledge for interacting with and responding appropriately to their children tend to report negative developmental outcomes (Dukewich, Borkowski, & Whitman, 1996). One plausible explanation for the finding that mothers in Qatar are not adequately knowledgeable about children's developmental norms and milestones may be related to the possible lack of interaction to specialists such as pediatricians, developmental psychologists, and exposure to primary sources of information about child development such as advanced parenting classes. A great deal of information and knowledge about normative child development can be gained through

interactions with healthcare professionals and child development specialists (Bornstein et al., 2010; Deutsch, Ruble, Fleming, Brooks-Gunn, & Stangor, 1988); therefore, a lack of exposure to such sources of information may deprive mothers from valuable knowledge about normative child development.

In the present study, we examined the contribution of the mothers' sociodemographic characteristics to maternal knowledge. The results obtained show that maternal education was a strong predictor for knowledge about child development. More educated mothers possess more maternal knowledge as measured by the KIDI. One reason which may explain this could be that more educated mothers in Qatar tend to have more access to sources of information and actively seek resources about child development. The second most common source of information about child development in the current study is reading materials and print sources, which have been shown to be effective in improving maternal knowledge (Reich, Bickman, & Worley, 2004; Vukelich & Kliman, 1985).

Another expected finding of our study is that having children aged 3 years and 5 years contributed to greater maternal knowledge about child development. A plausible explanation for this finding is to do with the fact that participants in the present study were adult mothers aged over 25 years with children aged 3 and 5 years who may acquire direct experience observing child development processes (the study results show a positive correlation between maternal knowledge and direct experience with children) via rearing their children. Thus, they may have gained more information about child development having been through the process of child rearing and are at a low risk of maternal amnesia (MacPhee, 1983).

The finding that maternal knowledge of child development was influenced by direct experience with children, parent education classes, and by what they had learned from print materials (books, magazines) and media sources could be explained by the fact that reliable sources which can provide accurate information about child development in non-Western countries such as Qatar are generally not available (Black et al., 2000; Richter, 2003) and this is why maternal knowledge about child development, in Qatar, is closely associated with these different sources.

The results of the present study when taken together with those of previous research in the field of parenting knowledge strongly suggest that maternal knowledge needs to be studied further to understand how it relates to parenting behaviors and child development because gaining a better understanding of parenting cognitions seems especially important given research findings that "Parents' knowledge of child development influences their expectations of, and interaction with, children. Indeed in developing countries, a mother's knowledge of child development has been positively correlated with her ability to enhance the development of her child" (Rikhy et al., 2010, p. 1).

### *Study Limitations*

A potential limitation of the present study concerns the nature of the study sample, being a convenient sample consisting

mostly of college-level mothers and adult mothers aged 26 years and over. Although the study sample was varied in terms of some of its demographic characteristics, it was dominated by two distinct groups of mothers consisting of participants with a college-level education or higher (71.4%) and adults mothers (26 years of age and over; 81.7%). The potential for sample variation was limited in this respect, and therefore, more research needs to be done.

### *Implications for Couple and Family Practice*

The present study is important because it is the first to be conducted in Qatar which examines the levels of mothers' knowledge of child development, documents the domains of child development in which mothers lack information, and identifies the principal sources and resources that are used by mothers to gain information about child development. The results of the current study stress the need for planning effective parent education programs to increase maternal knowledge of child development among mothers in Qatar. Given the country's great wealth and rapid economic growth, opportunities should be made available for parents, in general, and mothers, in particular, to be educated about typical child development and effective parenting practices. Previous research studies in this specific area of research have shown quite clearly that mothers with adequate knowledge of child development are more likely to interact with their children in more sensitive ways and adopt parenting strategies that tend to promote their children's development and well-being (Dichtelmiller et al., 1992; Goodnow, 1988; Miller, 1988; Sigel, 1992). Additionally, lack of adequate information about child development displayed by mothers in this study has important implications for clinical practice. In particular, there is emerging evidence that suggests that mothers' with inadequate knowledge about child development are more likely to use ineffective parenting practices that may compromise their children's health and development (Bornstein et al., 2010; Chance & Scannapieco, 2002; Dukewich et al., 1996). Lack of accurate information about their children's development may also prevent mothers from approaching healthcare providers to seek professional help for their children's health problems and developmental concerns (Rikard, Graziano, & Forehand, 1984; Sanders, Thomson, & Wilkinson, 2007). Further, the results of the current study also have important implications for family practice. When addressing children's health issues and developmental problems, family practitioners usually turn to mothers for information about their children's health and developmental history (Glascoe & Dworking, 1995); professionals need to be aware of the fact that knowledge about child development among mothers is limited, and when vital information about child development is lacking, family practice tends to be less efficient (Bornstein et al., 2010). Given the importance of maternal knowledge for parenting behavior and child development (Bornstein et al., 2010; Donnalley, 2013; Huang et al., 2005), family practitioners are therefore invited to work with community agency partners to design



educational and supportive programs for parents and families that can provide accurate information about child development and increase knowledge about effective parenting practices.

### Directions for Futures Research

Findings from the present study stress the need for more research to assess the actual impact of mothers' knowledge on parenting behaviors, in general, and the quality the child-mother interactions, in particular. Future research is also needed to investigate the impact of different maternal knowledge dimensions (or developmental knowledge domains) on parenting behaviors and child development. Studies of this type will be of great interest to both educators and clinicians. Knowledge gained through these studies can contribute to the development of effective culture- and content-specific interventions that meet the needs of families and their children in Qatar. Furthermore, the study findings begin to provide empirical information concerning Qatari maternal knowledge about children's health and development, which is a needed step in the process of developing programs in support of Qatar National Development Strategy 2011-2016 and Qatar National Vision 2030.

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### References

- Al-Ghanim, K. (2013). The hierarchy of authority based on kinship, age, and gender in the extended family in the Arab Gulf States. *International Journal of the Jurisprudence of the Family*, 333-360.
- Al-Maadadi, F. (1996). *Perceptions of mothers of preschool children in Qatar regarding developmentally appropriate programs for their children* (Unpublished doctoral dissertation). George Washington University, Washington, DC.
- Benasich, A. A., & Brooks-Gunn, J. (1996). Maternal attitudes and knowledge of child-rearing: Associations with family and child outcomes. *Child Development*, 67, 1186-1205.
- Belsky, J., Youngblade, L., & Pelsky, E. (1989). Child-rearing history, marital quality, and maternal affect. Intergenerational transmission in a low risk sample. *Development and Psychopathology*, 1, 291-304.
- Black, M. M., Eiser, C., & Krishnakumar, A. (2000). International research and practice in pediatric psychology: Challenges and new directions. *Journal of Pediatric Psychology*, 25, 363-366.
- Bornstein, M. H. (Ed.). (2002). *Handbook of parenting* (2nd ed., Vols. 1-5). Mahwah, NJ: Lawrence Erlbaum.
- Bornstein, M., Cote, L., Haynes, M., Hahn, C., & Park, Y. (2010). Parenting knowledge: Experiential and sociodemographic factors in European American mothers of young children. *Developmental Psychology*, 46, 1677-1693. doi:10.1037/a0020677
- Bornstein, M. H., & Cote, L. R. (2003). Cultural and parenting cognitions in acculturating cultures: II Patterns of prediction and structural coherence. *Journal of Cross Cultural Psychology*, 34, 350-373.
- Bornstein, M. H., & Cote, L. R. (2004). "Who is sitting across from me?": Immigrant mothers' knowledge of parenting and children's development. *Pediatrics*, 114, 557-564.
- Bornstein, M. H., Tamis-LeMonda, C. S., Pascual, L., Haynes, O. M., Painter, K., Galerin, C., & Pêcheux, M.-G. (1996). Ideas about parenting in Argentina, France, and the United States. *International Journal of Behavioral Development*, 19, 347-367.
- Brislin, R. W. (1980). Translation and content analysis of oral and written material. In H. C. Triandis & J. W. Berry (Eds.), *Handbook of cross-cultural psychology* (Vol. 2, pp. 389-444). Boston, MA: Allyn & Bacon.
- Brooks-Gunn, J., & Furstenber, F. F. (1986). The children of adolescent mothers: Physical, academic, and psychological outcomes. *Developmental Review*, 6, 781-790.
- Chance, T., & Scannapieco, M. (2002). Ecological correlates of child maltreatment: Similarities and differences between child fatality and nonfatality cases. *Child and Adolescent Social Work Journal*, 19, 139-161.
- Conrad, B., Gross, D., Fogg, L., & Ruchala, P. (1992). Maternal confidence, knowledge and quality of mother-toddler interactions: A preliminary study. *Infant Mental Health Journal*, 13, 353-362.
- Deutsch, F., Ruble, D., Fleming, A., Brooks-Gunn, J., & Stangor, C. (1988). Information-seeking and maternal self-definition during the transition to motherhood. *Journal of Personality and Social Psychology*, 55, 420-431.
- Dichtelmiller, M., Meisels, S. J., Plunkett, J. W., Bozynski, M. E., Claflin, C., & Mangelsdorf, S. F. (1992). The relationship of parental knowledge to the development of extremely low birth weight infants. *Journal of Early Intervention*, 16, 210-220.
- Donnalley, G. E. (2013). *Maternal knowledge and the relationship between home environment and child development* (Doctoral dissertation). Colorado State University, Fort Collins, CO.
- Dukewich, T. L., Borkowski, J. G., & Whitman, T. L. (1996). Adolescent mothers and child abuse potential: An evaluation of risk factors. *Child Abuse and Neglect*, 20, 1031-1047.
- Ertem, I. O., Atay, G., Dogan, D. G., Bayhan, A., Bingoler, B. E., Gok, C. G., . . . Isikli, S. (2007). Mothers' knowledge of young child development in a developing country. *Child Care: Health and Development*, 33, 728-737.
- Glascoc, F. P., & Dworkin, P. H. (1995). The role of parents in the detection of developmental and behavioral problems. *Pediatrics*, 95, 829-836.
- Golan, S., Spiker, D., Peterson, D., Mercier, B., Snow, M., & Williamson, C. (2008). Washington department of early learning parent needs assessment: Phone Survey (SRI Project 18252). SRI International; Menlo Park, CA: Jun. 2008 Parent Voices: A state-wide Look.
- Goodnow, J. J. (1988). Parents' ideas, actions and feelings: Models and methods from developmental and social psychology. *Child Development*, 59, 286-320.

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- Goodnow, J. J., & Collins, W. A. (1990). *Development according to parents: The nature, sources, and consequences of parents' ideas*. London, England: Erlbaum.
- Gorsuch, R. L. (1983). *Factor analysis* (2nd ed.) Hillsdale, NJ: Erlbaum.
- Hocevar, D., & El-Zahhar, N. (1985). Test anxiety in the USA and Egypt: A paradigm for investigating psychometric characteristics across cultures. *Advances in Test Anxiety Research*, 4, 203–213.
- Huang, K. Y., O'Brien Caughy, M. O. B., Genevro, J. L., & Miller, T. L. (2005). Maternal knowledge of child development and quality parenting among white, African-American and Hispanic mothers. *Journal of Applied Developmental Psychology*, 26, 210–220.
- Khalifa, B. (2006). *Attitudes toward domestic helpers, its impact on parenting practices, and on the psychological adjustment of children in Qatar: An analytic study*. Doha, Qatar: Supreme Council for Family Affairs.
- LeVine, R. A., Miller, P. M., Richman, A. L., & LeVine, S. (1996). Education and mother–infant interaction: A Mexican case study. In S. Harkness & C. M Super (Eds.), *Parents' cultural belief systems: Their origins, expressions, and consequences* (pp. 254–269). New York, NY: Guilford.
- MacPhee, D. (1981). *Manual for the knowledge of infant development inventory* (Unpublished manuscript). University of North Carolina, Wilmington, NC.
- MacPhee, D. (1983). *Mothers' acquisition and reconstruction of knowledge about infancy* (Unpublished doctoral dissertation). University of North Carolina, Chapel Hill, NC.
- McKim, M. K. (1987). Transition to what? New parents' problems in the first year. *Family Relations*, 36, 22–25.
- Miller, M. (1988). Parents' beliefs about children's cognitive development. *Child Development*, 59, 259–285.
- Qatar National Development Strategy 2011|2016: Towards Qatar National Vision 2030. Qatar General Secretariat for Development Planning (2011).
- Qatar National Vision 2030. General Secretariat for Development Planning (2008).
- Reich, S. (2005). What do mothers know? Maternal knowledge of child development. *Infant Mental Health Journal*, 26, 143–156.
- Reich, S., Bickman, L., & Worley, K. (2004, June). *Preventing child injury and promoting better child outcomes through the use of children's books*. Poster session presented at the Society of Prevention Research annual Conference, Quebec City, Canada.
- Ribas, R. deC., & Bornstein, M. H. (2005). Parenting knowledge: Similarities and differences in Brazilian mothers and fathers. *Inter-american Journal of Psychology*, 39, 5–12.
- Richman, A., Miller, P., & LeVine, R. (1992). Cultural and educational variations in maternal responsiveness. *Developmental Psychology*, 28, 614–621.
- Richter, L. M. (2003). Poverty, underdevelopment and infant mental health. *Journal of Pediatrics and Child Health*, 39, 243–248.
- Rikard, K. M., Graziano, W., & Forehand, R. (1984). Parental expectations and child deviance in Clinic-referred and non-clinic children. *Journal of Clinical Child & Adolescent Psychology*, 13, 179–186.
- Rikhy, S., Tough, S., Trute, B., Benzies, K., Kehler, H., & Johnston, D. W. (2010). Gauging knowledge of developmental milestones among Albertan adults: A cross sectional survey. *Public Health*, 10, 183. Retrieved from www.biomedcentral.com/1471-2458/10/183
- Roosa, M. W. (1983). A comparative study of pregnant teenagers' parenting attitudes and knowledge of sexuality and child development. *Journal of Youth and Adolescence*, 12, 213–222.
- Sanders, L. M., Thomson, V. T., & Wilkinson, J. D. (2007). Caregiver health literacy and the use of child health services. *Pediatrics*, 119, 86–92.
- Schilmoeller, G. L., & Baranowski, M. D. (1985). Childrearing of first borns by adolescent and older mothers. *Adolescence*, 2, 805–822.
- Sigel, I. E. (1992). The belief behavior connection: A resolvable dilemma? In I. E. Sigel, A. V. McGillicuddy-DeLici & J. J. Goodman (Eds.), *Parental belief systems: The psychological consequences for children* (2nd ed., pp. 433–456). Hillsdale, NJ: Erlbaum.
- Sistler, A. K., & Gottfried, N. W. (1990). Shared child development knowledge between grandmother and mother. *Family Relations*, 39, 92–96.
- Smith, T. K. (2002). The relationship between knowledge, attributions and behavior in adolescent mothers: Implications for child outcomes. *Dissertation Abstract International. B, The Sciences and Engineering*, 62, 5412.
- Stevens, J. H. (2012). Child development knowledge and parenting skills. *Family Relations*, 33, 237–244.
- Tamis-Lemonda, C., Chen, L., & Bornstein, M. (1998). Mothers' knowledge about children's play and language development: Short-term stability and interrelations. *Developmental Psychology*, 34, 115–124.
- Tamis-Lemonda, C., Shannon, J., & Spellman, M. (2002). Low-income adolescent mothers' knowledge about domains of child development. *Infant Mental Health Journal*, 23, 88–103.
- Vukelich, C., & Kliman, D. D. (1985). Mature and teenage mothers' infant growth expectations and use of child development information sources. *Family Relations*, 34, 189–196.
- Winter, L., Morawska, A., & Sanders. (2012). The knowledge of effective parenting scale (KEPS): A tool for public health approaches to universal parenting programs. *Journal of Primary Prevent*, 33, 85–97.