

Knowledge, gender, and guidance: Factors influencing Indian mothers responses to Attention Deficit Hyperactivity Disorder (ADHD)

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In the current study, we examined the socio-demographic characteristics and attitudes of Indian mothers, their knowledge about behaviors related to Attention Deficit Hyperactivity Disorder (ADHD) and the relationship with ADHD diagnosis among their children. Previous research showed 11.3% of primary school children in India have been diagnosed with ADHD, yet little research has been conducted on how mothers perceive these behaviors. A survey was completed by 100 mothers with children aged between 4-12 years. The Centers for Disease Control (CDC) ADHD Checklist for Children was used to assess the presence of ADHD symptoms in Indian children. The surveys were analyzed to identify maternal ADHD knowledge, socio-demographic characteristics and attitudes associated with ADHD within the context of Indian culture using SPSS. It was determined that the gender of the child, the geographical location the mother was raised, willingness of mother to seek professional help, mother's knowledge on handling child's behavior and mother's knowledge on ADHD were significantly associated with ADHD. Further analyses revealed that a lack of knowledge of ADHD and handling child's behavior were most associated with an ADHD diagnosis based on the CDC ADHD checklist.

Keywords: ADHD, India, education, knowledge, willingness, stigma

According to the National Institute of Mental Health, a neuro-behavioral disorder with ongoing inattention and/or hyperactivity-impulsivity that interferes with daily functioning is known as Attention Deficit Hyperactivity Disorder (ADHD) (National Institute of Mental Health, 2016). ADHD is prevalent worldwide with 7.2% of children being diagnosed globally (Thomas, Sanders, Doust, Beller, & Glasziou, 2015). In 2016 the United States had approximately 8.4% of children diagnosed with ADHD. Children with ADHD are usually hyperactive, unable to control their impulses, and/or have trouble paying attention to the point it interferes with their school and home life (Faraone, Sergeant, Gillberg, & Biederman, 2003).

A study by Venkata and Panicker (2013) identified the prevalence of ADHD in Tamil Nadu, India to be 11.3% among children attending primary school. ADHD prevalence was higher among males and in lower socio-economic groups, mirroring the United States (Venkata & Panicker, 2013). Behavioral disorders in India are perceived as a school specific condition, and often not taken seriously until these problems start affecting school performance (Karande et al., 2007; Wilcox, Washburn, & Patel, 2007).

Parents of children diagnosed with ADHD usually have doubtful attitudes about interventions and medication (Liu, Robin, Brenner, &

Eastman, 1991). Treatment acceptability depends on positive consequences, time, effort, and effectiveness (Reimers, Wacker, Cooper, & De Raad, 1992). Parents who observe their child as severe with behaviors such as oppositional, disruptive, and aggressive are more willing to pursue counseling instead of medication, as treatment (Bennett, Power, Rostain, & Carr, 1996). This paper will explore how mothers in the Indian context respond to behaviors related to ADHD as well as maternal factors that are associated with ADHD diagnosis.

Child rearing is mostly the responsibility of mothers in the Indian culture, where they are expected to prioritize home making and child rearing over a professional career (Valk & Srinivasan, 2011; Donner, 2016). These expectations are deeply rooted in the culture and enforced by family and friends. Fathers involve themselves only when behaviors become severe in a classroom setting (Sriram, 2011; Chaudhary, 2013). This study aimed to investigate the mother's socio-demographic characteristics, attitudes and knowledge of ADHD and their correlation with ADHD diagnosis in their child.

Method

Study setting

A cross-sectional survey was conducted among Indian mothers to explore correlates of appropriate responses to ADHD externalizing behaviors. This study was conducted at Public Health Research Institute of India (PHRII), in Mysore, India between January and August 2017. Mysore is the third most populated city in the state of

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Karnataka with a population of over one million with 641,356 males and 636,452 females (Chandramouli & General, 2011). With 70% of the population reporting their religion as Hindu, 21% Muslim, and remaining following other religions (City, 2011). The literacy rate in Mysore was approximately 86% in 2011, exceeding the state average by about 11% (Chandramouli & General, 2011).

Participants

Nonprobability sample of 100 mothers were recruited from the community by a trained research team in Mysore. To take part in the study, participants had to be mothers with a child between the ages of 4 to 12 years, be able to speak Kannada or English, and have the ability to complete informed consent process. Each participant was instructed to only refer to one child that fit the inclusion criteria for the current study.

Procedure

Three research assistants administered the surveys in Kannada to the participants to gather information on socio-demographics and attitudes toward behaviors associated with ADHD. The surveys collected demographic information such as, maternal age, education, religion, and occupation. In addition to questions pertaining to child rearing, knowledge about ADHD, and circumstances when seeking help with behaviors, participants completed the CDC ADHD check list (Attention-Deficit / Hyperactivity Disorder ADHD, 2018) and were asked to check off behaviors applicable to their child. The checklist included items such as "Often does not give close attention to details or makes careless mistakes in schoolwork, work, or other activities", "Often avoids, dislikes, or doesn't want to do things that take a lot of mental effort for a long period of time (such as schoolwork or homework)". The American Psychiatric Association's Diagnostic and Statistical Manual, Fifth edition (DSM-5) is affiliated with the CDC ADHD checklist. It is used by professionals in mental health to help diagnose ADHD.

The study was reviewed and approved by the Institutional Review Boards at Public Health Research Institute of India, and Florida International University. All participants underwent an informed consent process before participating in the study.

Statistical analysis

Descriptive analyses were used to assess the frequency distributions of the socio-demographic characteristics of mothers, mother's attitudes and responses towards child's behavior, mother's knowledge of ADHD and child rearing activities. Chi-squared analysis was conducted to test the association between ADHD diagnosis and maternal socio-demographic variables, mother's attitudes and responses towards child's behavior, mother's knowledge of ADHD and child rearing activities. A p-value <0.05 was considered statistically significant. Further post-hoc analyses (analysis of standardized residuals) were conducted on variables that were significantly associated with ADHD diagnosis. Data were checked, cleaned and analyzed using SPSS version 23.

Results

The average age of the participants was 31.58 years (Standard deviation=4.397). While 19% of mothers had completed less than 10 years of schooling, 53% had a high school degree, and 28% had more than high school education. The participants self-identified their religion as Hindu (95%), Muslim (2%), Christian (2%), and other

Table 1: Socio-demographic characteristics of study participants and their association with ADHD (n=100)

Characteristic	Total		ADHD		p Value	
	n	(%)	Yes	No		
Maternal	20-25 years	7	7	7	0	0.251
Age	26-30 years	32	32	30	2	
	31-35 years	43	43	36	7	0.930
	>36 years	18	18	14	4	
Education	1-10 years	19	19	17	2	
	11-12 years	53	53	46	7	0.375
Religion	> 12 years	28	28	24	4	
	Hindu	95	95	82	13	0.416
Caste	Not Hindu	5	5	5	0	
	Scheduled Tribe	5	5	5	0	0.014
	Scheduled Caste	25	25	23	2	
	General	70	70	59	11	
Gender of	Male	57	57	54	3	0.278
Child	Female	43	43	33	10	
State Born	Karnataka	92	92	81	11	0.035
	Other	8	8	6	2	
State Raised	Karnataka	89	89	80	9	0.601
	Other	11	11	7	4	
Language	Kannada	91	91	78	13	0.705
	Other	9	9	9	0	
Responsible	Mother	74	74	65	9	0.690
for child's	Father	14	14	11	3	
behavior	Mother & Father	9	9	8	1	
	Other	3	3	3	0	
Responsible	Mother	78	78	69	9	0.008
for addressing	Father	13	13	10	3	
Child's	Mother & Father	8	8	7	1	
behavior	Other	1	1	1	0	
Knowledge	No knowledge	3	3	1	2	0.000
on handling	Somewhat	18	18	15	3	
child's	knowledgeable Fairly	42	42	35	7	
behavior	knowledgeable Very knowledgeable	37	37	36	1	
Knowledge	No knowledge	12	12	5	7	0.441
on ADHD	Somewhat	32	32	29	3	
	knowledgeable	35	35	32	3	
	Fairly knowledgeable Very knowledgeable	21	21	21	0	
Circumstances	Education	26	26	23	3	0.705
when seeking	Distracted child	4	4	3	1	
professional	Uncontrollable	7	7	7	0	
help	behaviors					
	Education & behavior	5	5	5	0	
	Education & distracted	5	5	5	0	
	Education & health	2	2	1	1	
	Other	51	51	43	8	
Seeking	Family	55	55	48	7	0.032
advice about	Friends	41	41	35	6	
ADHD	Other	4	4	4	0	0.032
Willing to Seek	No	34	34	26	8	
Professional	Yes	66	66	61	5	

Table 2: Common symptoms associated with ADHD

Behaviors applicable to child	Total		ADHD		p Value
	n	(%)	Yes	No	
Inattentive					0.011
Yes	69	69	64	5	
No	31	31	23	8	
Trouble listening					0.019
Yes	67	67	62	5	
No	33	33	25	8	
Does not follow instructions					0.000
Yes	63	63	61	2	
No	37	37	26	11	
Unorganized					0.000
Yes	60	60	59	1	
No	40	40	28	12	
Avoids mental effort					0.000
Yes	64	64	62	2	
No	36	36	25	11	
Loses things					0.005
Yes	59	59	56	3	
No	41	41	31	10	
Distracted					0.000
Yes	74	74	72	2	
No	26	26	15	11	
Forgetful					0.001
Yes	57	57	55	2	
No	43	43	32	11	
Fidgets					0.000
Yes	70	70	70	0	
No	30	30	17	13	
Hyperactive					0.000
Yes	75	75	72	3	
No	25	25	15	10	
Excessive running and climbing					0.000
Yes	66	66	63	3	
No	34	34	24	10	
Trouble being quiet					0.000
Yes	59	59	58	1	
No	41	41	29	12	
On the go					0.000
Yes	59	59	58	1	
No	41	41	29	12	
Talkative					0.000
Yes	63	63	61	2	
No	37	37	26	11	
Blurts out answers					0.002
Yes	48	48	47	1	
No	52	52	40	12	
Impatient					0.007
Yes	64	64	60	4	
No	36	36	27	9	
Interrupts					0.000
Yes	48	48	48	0	
No	52	52	39	13	
ADHD CDC Checklist					
6 or more behaviors	83	83			
Less than 6 behaviors	7	7			

(1%) with 70% of the Hindus reporting that they belonged to the general caste that is determined by birth in the Hindu religion. The majority (91%) of the study participants were fluent in *Kannada*. About 35% of the participants were fairly knowledgeable about ADHD, and 42% were knowledgeable about handling their child's behavior.

Fifty-seven participants had sons and 43 had daughters that fit the age criteria. Majority of the participants (64%) had more than one child, and each participant was instructed to only refer to one child that fit the inclusion criteria for the current study. About 87% of the participants self-reported that their child exhibited six or more behaviors listed in the CDC ADHD checklist (see table 1).

The gender of the child, the state in which the mother was raised, maternal knowledge on handling child's behavior, maternal knowledge on ADHD and willingness of mother to seek help were found to be significantly associated with an ADHD diagnosis, six or more behaviors participants self-reported in the CDC ADHD checklist. There were no significant differences in the diagnosis of ADHD among participants belonging to different religion, caste, state born, education level, maternal age, and language spoken. There was also no difference in the ADHD diagnosis and person responsible for teaching and/or addressing child's behavior, circumstances when seeking professional help, or whose advice was sought with respect to the child's behavior (see Table 1). Post-hoc analysis revealed that a lack of knowledge on handling child's behavior as well as lack of knowledge of ADHD contributed the most to the significant associations observed between knowledge and ADHD, standard residual values were greater than +2 (2.6 & 4.4 respectively). The most common symptoms were being hyperactive (75%), being distracted (74%), fidgeting (70%) and being inattentive (69%) (see Table 2).

Discussion

Our results found that the gender of the child was significantly associated with ADHD. This finding has been supported by prior research which suggests that boys were three times more likely than girls to be diagnosed with ADHD (Kane, Mikalac, Benjamin, & Barkley, 1990; Szatmari, Offord, & Boyle, 1989). A neuropsychological study by Bálint et al. (2009) concluded that ADHD varies by degree of impairment, ultimately males display a more severe level of impairment. There is limited research in the Indian context that have analyzed ADHD and gender in the Indian context, but current research has shown that ADHD prevalence and geographic location have a limited correlation (Polanczyk et al., 2007).

Research has shown that parental involvement has been positively associated with children's educational performance (Barnard, 2004; Feuerstein, 2000; Jeynes, 2003; McWayne, Hampton, Fantuzzo, Cohen, & Sekino, 2004). Parental involvement in academic achievement has a high significance regardless of the level of education the parent has or the economic background (Bogenschneider, 1997; Shaver & Walls, 1998). When a child's parents are knowledgeable about the child's behavior, this can improve relationships, the child's behaviors, and overall parenting. Child rearing in India is primarily done by the mother in patriarchal societies such as India. The traditional roles of women are rooted in the cultural norms, they include being homemakers and caretakers (Valk & Srinivasan, 2011). Indian mothers are usually the primary

caregivers while the fathers have minimal involvement (Das & Žumbyté, 2017). Maternal parenting and the child's behavior are closely linked, Indian mothers are held responsible for children's negative externalizing behavior, regardless of a medical diagnose (Jacobs, Woolfson, & Hunter, 2016; John, 2012; John, Bailey, & Jones, 2017).

ADHD treatment consists of stimulant medication, and/or behavioral interventions. Wolraich et al. (1990) found that 80% of children diagnosed with ADHD were treated with stimulant medication. Although parents prefer non-pharmacological treatments, they were recommended less frequently by professionals (Corkum, Rimer, & Schachar, 1999). ADHD treatment outcomes are directly correlated to adherence of recommended treatment, lack of adherence is not associated with parental stress, socioeconomic status, or other factors (Rostain, Power, & Atkins, 1993). Adherence with proper treatment is a direct outcome of parents' knowledge of ADHD and their opinions on treatments (Corkum, Rimer, & Schachar, 1999).

Professional help for child rearing in India is seen as a taboo and families often do not seek counseling or professional services when their child is having behavioral problems (Carson, Jain, & Ramirez, 2009). Stigma in the Indian culture is very prevalent when examining unmada, severe mental disorder, in children. Many with a stigma of mental illness have a fear of seeking professional guidance. In a study done by Singh (2015) Indians had a more pessimistic attitude towards mental illness compared to other cultures.

Children with ADHD are often perceived as disruptive and hyperactive which may lead to perceptions of being stigmatized for their mothers (John, 2012; Jacobs et al., 2016; John et al., 2016). In India the child's behaviors are viewed as a direct reflection of the mothers parenting styles, whether the child is diagnosed with a mental illness or not (John, 2012; Viswanath & Chaturvedi, 2012). In addition to the potential for stigma associated with having a child with a mental disorder, mothers also perceive the risk of stigma if they seek psychological services. The Indian government is also taking steps to de-stigmatize mental illness through the National Mental Health Program, which promotes usage of mental health services (Gaiha et al., 2014).

This pilot study has provided invaluable information about the correlates of ADHD diagnosis, but it is not without limitations. The findings may not be generalizable as the study did not use a probability sample. It is possible that mothers may have recalled the information about their children differently which could result in information bias. Due to the small sample size, it is possible that our study did not have the power to examine the relationship of various factors that affect ADHD diagnosis.

Conclusion

Despite the limitations, the current study has provided findings about the possible themes that may be related to ADHD behaviors in India. This study contributes to the limited literature about ADHD behaviors and maternal attitudes about ADHD in the Indian context. Considering the stigma surrounding behavioral and mental health in India, findings from this study help understand the maternal beliefs that are associated with ADHD diagnosis. These beliefs suggest the need for further research using qualitative approaches to understand the reasoning behind these beliefs, and thus suggesting approaches

for intervention. Findings regarding the association of gender were comparable to studies from contexts other than India but more research is needed to understand the biological and socio-behavioral underpinnings regarding this association. Findings from our study also suggest examining the perceptions of ADHD related behaviors from a community-level cultural beliefs and attitudes towards mental health. The limited amount of research in the Indian context makes it difficult to assume the reasoning behind these results. Future studies should focus on the effects of educating the general population on ADHD and ADHD associated behaviors among children in an effort to address and plan for services and interventions for ADHD in Karnataka, India. These findings have implications for examining a communal approach on cultural beliefs and attitudes towards mental health.

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