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Predictors of Fathers' Involvement in the Rehabilitation of Children with Autism Spectrum Disorder in the United Arab Emirates

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Abstract: Background: Raising children with autism spectrum disorder (ASD) has consistently been found to be challenging for parents. However, available studies have mainly drawn on mothers, raising questions about the extent of involvement of fathers in the raising of children with ASD. Indeed, fathers' involvement has consistently been reported as fundamental to the development of children with ASD. Thus, it necessitates extensions of western-dominated literature to novel contexts such as the United Arab Emirates (UAE). The purpose of this study, therefore, was to explore the extent and predictors of fathers' involvement (attitude, support and participation in training) in the nurturance of children with ASD in the UAE. Methods: One-hundred and seventy-seven (177) fathers raising children with ASD in the UAE completed the revised 27-item Fathers' Involvement in Development and Rehabilitation Scale. The SPSS was used to compute means and perform a multivariate analysis of variance and hierarchical multiple regression. Results: Fathers rated themselves highly on each of the tenets of involvement: attitude, support and partic-ipation in training to assist their children with ASD. Also, support and participation in training made significant contributions to the variance in attitude towards children with ASD. Conclusion: The study concludes on the need for policymakers to capitalise on the gains already made in creating a conducive environment for the development of children with ASD in the UAE. Regular engagement between policymakers and fathers could enhance the quality of their involvement in the raising of children with ASD.

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1. Introduction

Community-based disability rehabilitation has been advocated as fundamental in the effort towards promoting the well-being of children with disabilities (Chappell & Johannsmeier, C. 2009; Khasnabis et al., 2010; Lukersmith et al., 2013). The rehabilitation processes encompass the utilisation of existing community services or resources, such as schools and hospitals, to support the development of children with disabilities (Khasnabis et al., 2010). However, the first step towards promoting the participation of children with disabilities in community services is to have a supportive family who would facilitate their participation (Fellin et al., 2015; Foster et al., 2012; Palmer & Glass, 2003). At the micro-level, both parents of a child with disabilities are expected to be involved in nurturing them and promoting their participation in essential services within the community (United Nations [UN], 2007; World Health Organisation [WHO], 2011). However, in the non-western context, children with disabilities, such as those living with autism spectrum disorder (ASD), continue to struggle to access social amenities such as education within the society (AlQahtani & Estratopoulou, 2023; Crabtree, 2007; Gaad, 2011, 2019; Lamba et al., 2022; Opoku et al., 2023a, 2023b). With voices of mothers consistently being captured in research (Abdat et al., 2023; Lamba et

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al., 2022; Opoku et al., 2023a, 2023b), there is an urgent need to explore paternal involvement in the raising of children with ASD.

Parental involvement is a multifaceted concept which includes acceptance, interaction and commitment (Bogossian et al., 2019) towards optimising the development of children with ASD. This encapsulates behavioural support and affection between parents and their children. In this study, involvement was defined as behavioural (support and training) and affective (attitudes) relationships between parents and their children with ASD. Understandably, studies on parental involvement in the raising of children are gaining traction based on the proposition that parental involvement has a positive impact on developmental domains such as intelligence, social and physical development (Fan & Williams, 2010). The development is more pronounced in the event that fathers are involved in the raising of their children, including those with ASD (Laxman et al., 2015; McWayne et al., 2013; Meadan et al., 2015). This has ignited discussions on the need for systems to encourage fathers to contribute tremendously when it comes to the raising of children with ASD (Donaldson et al., 2011). While mothers appear to have challenges raising children with ASD (Abdat et al., 2023; Lamba et al., 2022; Opoku et al., 2023a, 2023b), the voices of fathers are somehow conspicuously missing in non-western literature.

Previous research has attempted to study the extent of fathers' involvement in the raising of children with ASD (Bogossian et al., 2019; Brobst et al., 2009; Camilleri, 2022; Cheuk & Lashewicz, 2016; Frye, 2016; Hannon et al., 2019; Martins et al., 2013; Ozturk et al., 2014; Pisula & Porębowicz-Dörsmann, 2017; Paynter et al., 2018; Potter, 2016a, 2016b; Rafferty et al., 2020; Rudelli et al., 2021; Seymour et al., 2022; Sim et al., 2018; Soltanifar et al., 2015). These studies could be broadly categorised into three: experiences (Camilleri, 2022; Cheuk & Lashewicz, 2016; Martins et al., 2013), support (Potter, 2016a, 2016b) and challenges raising children with ASD (Frye, 2016; Paynter et al., 2018; Rudelli et al., 2021; Seymour et al., 2022; Sim et al., 2018; Soltanifar et al., 2015). In terms of experiences, fathers embrace their children with ASD as equal members of the family (Camilleri, 2022; Donaldson et al., 2011). Similarly, some studies have reported that fathers assist their children with schoolwork and facilitate their participation in society (Potter, 2016a, 2016b). Nonetheless, inasmuch as fathers appreciate their children as equal members of society, they encounter some challenges, such as stress, financial problems and less time to support their children with ASD (Camilleri, 2022; Martins et al., 2013; Rafferty et al., 2020). These studies are limited in scope because such exploration is yet to be extended to non-western contexts such as the UAE.

In this study, ASD was defined as a neurological condition which is evidenced by a deficit in three qualitative areas: communication, repetitive behaviour and social functions (American Psychiatric Association, 2013). Out of the over 5000 children with disabilities enrolled in school in UAE, nearly half are living with ASD (Federal Competitiveness and Statistics Centre, 2020). In the UAE, it is estimated that one out every 146 children is living with ASD—an estimate projected to grow due to environment-related factors (Virolainen et al., 2020). However, the onset of ASD is linked to the superstitious belief that ASD is caused by evil persons within the society (AlQahtani & Estratopoulou, 2023; Crabtree, 2007; Lamba et al., 2022; Morgan, 2023). Furthermore, children with ASD are discriminated against in communities and face formidable barriers when it comes to accessing essential services within the society (Gaad, 2011, 2019; Morgan, 2023). In such a cultural environment, it is useful to study the extent of involvement of fathers in the raising of children with ASD. The purpose of this study was to explore the extent of fathers' involvement in the raising of children with ASD in the UAE. The first step towards promoting the inclusion of children with ASD in society is changing attitudes (De Boer et al., 2011). Thus, another aim was to explore the relationship between the affective and behavioural involvement of fathers in the raising of children with ASD. The aims were achieved by answering the following research questions:

1. What is the extent of fathers' involvement in the raising of children with ASD in the UAE?
2. Which personal profile among fathers could provide additional explanation of their involvement in the raising of children with ASD in the UAE?

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3. Will behavioral involvement contribute to the variance in affective involvement of fathers in the raising of children with ASD in the UAE?

2. Methods

2.1. Study Participants

The UAE is divided into seven states (emirates), but for ease of administration, there are two broad divisions, namely, Abu Dhabi and the Northern Emirates (Ajman, Dubai, Fujairah, Ras Al Khaimah, Sharjah and Umm Al Quwain). While separate governmental institutions in Abu Dhabi manage public schools and other entities, common governmental entities govern institutions in the remaining emirates (known as Northern Emirates). Overall, 177 fathers were recruited nationally for this study (see Table 1).

Table 1. Summary of demographic characteristics of study participants.

Categories (n = 177)	Frequency	Percentage
Age		
20–30 years	7	4%
31–40 years	78	44%
41–50 years	71	40%
51 years and above	21	12%
Nationality		
Citizen	92	52%
Expats	85	48%
Resident		
Abu Dhabi	136	77%
Northern Emirates	41	23%
Education		
At most Secondary	71	40%
Bachelor	74	42%
Graduate	31	18%
Employment status (n = 176)		
Unemployed	19	11%
Employed	158	89%
Family income		
Less than 10,000	50	28%
10,000 – 20,000	40	23%
21,000 – 30,000	39	22%
31,000 or more	48	27%
Years of marriage (n = 174)		
Less than 10 years	143	82%
11–20 years	25	14%
31 years or more	6	4%
Gender of child		
Male	132	75%
Female	45	25%
Age of children (n = 176)		
1–8 years	133	76%
9–13 years	27	15%
14 years or more	16	9%
Severity of disability		
Mild	36	20%

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Moderate	117	66%
Severe	24	14%
School enrolment		
Yes	131	74%
No	46	26%

Calculation of the scale's reliability using Cronbach Alpha yielded the following results: support (0.88), attitude (0.91) and training (0.94).

2.2. Instrument

A two-part instrument was used to collect data from fathers. The first part collected background data about the participants (see Table 2 for details).

Table 2. Mean scores for items on Fathers' Involvement in Development and Rehabilitation Scale.

Items	M	SD
Support domain		
I am supportive of my child's mental and cognitive skills.	4.51	0.71
I am aware of how to take care of my child of determination	4.12	0.85
I participate in providing basic needs for my child of determination, such as food, drinks, and clothing, etc.	4.80	0.50
I have a good relationship with my child of determination.	4.73	0.51
I hug and/or kiss my child of determination	4.79	0.49
I laugh with my child of determination	4.77	0.48
I comfort my child of determination when they are upset or crying	4.73	0.52
My child of determination feels comfortable and at ease around me	4.73	0.51
My child of determination trusts that I am a source of healthy and positive support when dealing with challenges and crises.	4.38	0.97
I make an effort to support the development of my child of determination.	4.58	0.68
I accept the actions and behaviors of my child of determination.	4.49	0.75
I take my child of determination to the shops.	4.39	0.83
I take my child of determination to fun activities such as the zoo or a sporting event.	4.47	0.76
I interact physically with my child of determination, such as by roughhousing or tickling.	4.57	0.68
Attitude		
I try my best to raise my child of determination, and am keen on continuously learning more skills about	4.24	1.07
I realize that my child of determination needs more support than typical children.	4.52	1.01
I participate in collaboration and dialogue with my child of determination's mother about raising our child.	4.45	1.01
I put so much into parenting my child of determination and don't have time for myself.	3.65	1.21
I share with my child of determination's what is going on in his mind at any time about our child.	4.19	1.07
My commitment to providing proper care for my child of determination makes me a good father.	4.37	0.92
My top priority is raising my child of determination, as I am an authority figure in the family.	4.35	0.98
My involvement in raising our child of determination helps facilitate their mother's roles and responsibilities.	4.26	0.94
I am satisfied with my involvement as a father of a child of determination.	4.05	1.13
Training		
Attending evidence-based programs helped me develop and learn communication skills suitable for my child of determination.	4.06	0.87

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Attending evidence-based programs helped me use appropriate strategies to support the development of my child of determination.	4.06	0.94
Attending evidence-based programs enabled me to overcome challenges of raising my child of determination.	3.85	1.16
Attending evidence-based programs has increased my ability to meet the needs of my child of determination and enhance their capabilities.	4.04	1.05

The second part was the revised 27-item Fathers' Involvement in Development and Rehabilitation Scale (FIDRS), which was developed for this study to assess paternal involvement in raising children with disabilities (authors et al., in press). The instrument comprises three domains: the support domain (n = 14), attitude towards parenting (n = 9) and participation in training (n = 4). The support domain is made up of three sub-scales, which are personal support, learning and development and well-being and development. Attitude has two sub-scales: belief towards parenting and beliefs towards support. Finally, training is a unidimensional scale. The instrument was developed based on an extensive review of the literature (Bogossian et al., 2019; Ozturk et al., 2016; Paynter et al., 2018; Potter, 2016a, 2016b; Rudelli et al., 2021; Seymour et al., 2022; Sim et al., 2018; Soltanifar et al., 2015) on each of the tenets that informed the design of the items.

2.3. Procedure

The study and its protocols were approved by the social science ethics review committee at X University (ERSC_2023_2467). Following institutional approval, approvals were sought from the Emirates Schools Establishment, Ministry of Community Development, and Zayed Higher Organization for People of Determination. Formal letters were sent to all special schools and rehabilitation centres for permission to conduct this study. Those that responded favourably were sent a detailed information statement and online links to be forwarded to fathers for completion. The funder of this study sent text messages to parents of children with disabilities in Abu Dhabi and that was the largest drive to recruit many parents to participate in the research study.

The data were collected virtually using *QuestionPro*. The instrument was in both Arabic and English to enable participants to complete it in their preferred language. The data were collected between February 2023 and June 2023. The information statement contained a detailed description of the study, its objectives, and the relevance of the findings to future policy development in the UAE. The participants were assured that neither their identity nor any identifiable information would be used in the reporting of the study. They were also assured that the data collected would not be made available to any external body and would be used only for the purposes of this research. All the fathers who participated in this study gave their consent to do so.

2.4. Data Analysis

The data collected were transferred to Microsoft Excel for cleaning before being imported to SPSS version 29 for analysis. The data were found to be normally distributed and, as such, suitable for a parametric test.

Thereafter, the researchers continued to answer the research questions. To answer research question 1, mean scores were calculated for each of the tenets/sub-scales.

For research question 2, a multivariate analysis of variance (MANOVA) was performed to understand the differences between participants (based on demographic variables) in the combined dependent variables (attitude, support, and participation in training) (Pallant, 2020). The following assumptions were observed to make sure that they were not violated: linearity, outliers and homogeneity of variance. A Bonferroni-adjusted alpha level of 0.01 (i.e., 0.05 divided by 3), which is the number of dependent variables (Pallant, 2020), was the baseline for determining whether there were differences between the participants. The strength of the difference was assessed using the effect size (partial eta squared), which was interpreted as follows: small (0.01–0.05), moderate (0.06–0.1), and large (at least 0.1) (Pallant, 2020).

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For research question 3, hierarchical multiple regression was computed. Prior to the computation, Pearson's moment correlation co-efficient was computed to understand the relationship between the continuous variables: attitude, support and participation in training. For the multiple regression, attitude was operationalised as an outcome variable, and support and training were used as predictors while controlling for demographic variables. The following assumptions were observed to make sure they were not violated: normality, linearity, multicollinearity and homoscedasticity (Pallant, 2020).

3. Results

3.1. Level of Fathers' Involvement

The main scores were as follows: support for children with ASD (M = 4.58, SD = 0.42), attitude towards children with ASD (M = 4.23, SD = 0.78) and participation in training (M = 4.00, SD = 0.50) (see Table 2 for details).

3.2. Association Between Demographic Variables and Involvement

MANOVAs were computed to explore the association between demographic variables and involvement (see Table 3). First, the difference between nationality and combined dependent variables was found. F (3, 173) = 3.87, Wilks' Lambda = 0.94, p = 0.01 with a moderate effect size, partial eta squared = 0.06. Individually, the difference between participants on their attitudes towards children with ASD only was found. F (1, 175) = 9.73, p = 0.002 with a small effect size, partial eta squared = 0.05. The mean scores showed that citizens of the UAE (M = 4.40, SD = 0.62) who had children with ASD demonstrated more favourable attitudes than expats (M = 4.04, SD = 0.89).

Table 3. Difference between participants and involvement.

	Wilks' Lambda	MAN. F	ANOVA F.		
			Support	Attitude	Training
Age	0.94	1.30	2.20	.23	1.04
Effect size		0.02	0.04	0.004	0.02
Nationality	0.94	3.87**	0.14	9.73**	3.62
Effect size		0.06	0.001	0.05	0.02
Residence	0.93	3.93**	0.47	11.31**	2.06
Effect size		0.06	0.003	0.06	0.01
Education	0.96	1.12	0.05	2.48	0.97
Effect size		0.02	0.001	0.03	0.01
Employment status	0.99	0.56	0.04	0.01	1.49
Effect size		0.01	0.001	0.001	0.008
Monthly income	0.93	1.46	1.80	3.54	0.28
Effect size		0.03	0.03	0.06	0.005
Years of marriage	0.97	0.88	0.65	0.56	1.13
Effect size		0.02	0.008	0.006	0.01
Gender of children	0.98	1.08	0.58	0.16	2.19
Effect size		0.02	0.003	0.001	0.01
Age of children	0.94	1.74	1.64	1.32	1.13
Effect size		0.03	0.02	0.02	0.01
Severity of disability	0.97	0.77	0.42	0.86	1.32
Effect size		0.01	0.005	0.01	0.02
School enrolment	0.98	1.11	2.16	0.71	0.46
Effect size		0.02	0.01	0.004	0.003

**$p \leq 0.01$.

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Second, the difference between participants on the combined dependent variables on residence of participants was found. F (3, 173) = 3.93, Wilks' Lambda = 0.94, p = 0.01 with a moderate effect size, partial eta squared = 0.06. Individually, the difference between participants on their attitudes towards children with ASD was found. F (1, 175) = 11.31, p = 0.001, with a moderate effect size, partial eta squared = 0.06. Observation of the mean scores showed that those living in the Northern Emirates (M = 4.58, SD = 0.43) demonstrated more favourable attitudes than those living in Abu Dhabi (M = 4.12, SD = 0.83).

3.3. Support and Training as Predictors of Attitude

The Pearson-Moment correlation co-efficient was computed to explore the relationship between the three tenets of involvement: support and attitude (r = 0.32, p = 0.001), support and participation in training (r = 0.14, p = 0.06) and attitude and participation in training (r = 0.26, p = 0.001).

Multiple regression was computed to understand the contribution of support and participation in training in the variance in attitudes towards children with ASD while controlling for demographic variables (see Table 4 below). In step 1, support (beta = 0.28, p = 0.001) and training (beta = 0.22, p = 0.003) made a significant contribution of 15% in the variance in attitude, F (2, 169) = 14.33, p = 0.001.

Table 4. Support and training regressed on attitude towards children with ASD.

	Uns. B	**S.E.**	**Stan. beta**	**t**	***p***
Step 1					
Support	0.34	0.09	0.28	3.95	0.001**
Training	0.77	0.25	0.22	3.03	0.003**
Step 2					
Support	0.33	0.09	0.28	3.87	0.001**
Training	0.59	0.26	0.17	2.26	0.03*
Age	0.21	0.74	0.02	0.29	0.77
Nationality	−0.61	1.32	−0.04	−0.47	0.64
Residence	2.76	1.34	0.16	2.06	0.04*
Education	−1.42	.78	−0.15	−1.83	0.07
Employment	0.94	1.78	0.04	0.53	0.60
Family income	0.74	0.54	0.12	1.36	0.18
Years of marriage	−0.27	1.14	−0.02	−0.24	0.81
Gender of children	−0.70	1.17	−0.04	−0.60	0.55
Age of children	0.69	0.85	0.06	0.82	0.42
Severity	−0.52	0.89	−0.04	−0.59	0.56
School enrolment	−0.62	1.07	−0.04	−0.58	0.56

**$p \leq .01$; *$p \leq 0.05$.

In step 2, demographic variables were added to the model to explore its influence on the model. The demographic variables made only an 8% contribution to the variance in attitudes towards children with ASD, F (11, 158) = 1.66, p = 0.09. However, the combined demographic variables and the two continuous variables made a significant 23% contribution to the variance in attitudes towards children with ASD, F (13, 158) = 3.70, p = 0.001. Individually, while the two continuous variables made a significant contribution, among the demographic variables, only the place of residence of participants significantly contributed to the variance in attitude.

4. Discussion and Conclusion

The study reported here was conducted due to the lack of literature on fathers' involvement in the lives of their children with ASD. Most importantly, the results showed that fathers rated themselves highly on each of the tenets of involvement. This finding slightly agrees with previous studies which reported that fathers held a favourable disposition and were committed to supporting

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their children with ASD (Camilleri, 2022; Cheuk & Lashewicz, 2016; Martins et al., 2013). The findings reported in this study are promising and showed that, though children with ASD demonstrate qualitative deficits in critical areas like communication, behaviour and social interactions, their fathers seemed to be still involved in their upbringing. The result could be credited to the steps taken by the UAE's government to bring disability issues to the mainstream, develop policies and advocate for the inclusion of children with ASD in society (Gaad, 2011, 2019). While cultural stereotypes about the onset of ASD are rife in the communities (AlQahtani & Estratopoulou, 2023; Crabtree, 2007; Lamba et al., 2022; Morgan, 2023), fathers appear to demonstrate commitment towards nurturing children with ASD in societies. The perceived involvement of fathers in the lives of children with ASD could be consolidated or capitalised on by policymakers through regular engagement to understand their needs and take steps to address them.

In the UAE, anecdotal evidence showed persistent and deep-seated negativity toward children with ASD, which derails the development of children with ASD (AlQahtani & Estratopoulou, 2023; Crabtree, 2007; Lamba et al., 2022). In this study, the computation of multiple regression showed that support and participation in training made a significant contribution in the variance in the attitudes of fathers towards children with ASD. This could probably lead to fathers supporting their children and participating in training once they have positive attitudes towards children with ASD and vice versa. The trend identified here is expected because the communities harbor negative feelings toward children with disabilities, which contributes to familial tensions (Lamba et al., 2022). This probably suggests that changing the attitudes of fathers has the potential to impact the support they would offer to their children with ASD. It is thus recommended that policymakers engage in conservations with fathers especially on embracing their children and offering them training on how they would contribute to the development of their children with ASD.

The nationality of fathers provided additional insight into their involvement in the raising of their children with ASD. The results showed that fathers who are citizens of the UAE rated themselves more positively than expat fathers raising children with ASD. It is useful to mention that expats constitute over 80% of the national population. Moreover, the expats have travelled to the UAE to work and might have a small social network to rely on them for emotional or psychological support. This may indicate that expat parents in the UAE are struggling to raise children with ASD in the UAE (Lamba et al., 2022). This cannot be said of natives who live close to their immediate and extended family members, who in turn might offer social support when needed. There is, therefore, the need for policymakers to tailor training programmes or intervention support to suit the uniqueness of expat fathers in the UAE.

Another demographic variable which provided additional insight into the involvement of fathers in the raising of children with ASD was their place of residence. While the MANOVA showed that fathers in the Northern Emirates indicated more favourable attitudes than those in Abu Dhabi, the regression showed that fathers in Abu Dhabi are 1.6 times more likely to demonstrate positive attitudes towards children with ASD than those living in the Northern Emirates. A previous study in the UAE reported differences in stress levels raising children with disabilities between parents based on their place of residence (Abdat et al., 2023). Although it is difficult to explain the rationale behind this result, the contextual arrangement could offer some clue on what seems to be happening within the country. The UAE has different services or supervisory bodies based on the jurisdiction where fathers live. The disparities between MANOVA and regression, as well as contextual peculiarity, lend support for future studies to delve deep into the paternal experiences of involvement in the raising of children with ASD.

The study reported here is not without limitations. First, the participants were skewed towards those who had enrolled their children with ASD in special schools or were receiving services at rehabilitation centres. The fathers of children with ASD outside of these settings were excluded. Thus, it is impossible to generalise the findings. However, those who took part in this study and those who were excluded have common systems and a shared culture. The findings reported here could mirror the experiences of fathers considered for participation. Second, the study was guided by the self-reported experiences of fathers, thus, it is susceptible to response bias. Moreover, it was beyond the

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scope of this study to verify the claims reported by participants. Fathers were provided an information statement and they rated their involvement in their preferred language. It is possible that they gave accurate accounts of their involvement in the raising of their children with ASD. Regardless of this, a future study could compare the ratings given by both fathers and mothers regarding paternal involvement in the nurturing of children with ASD to provide a clearer picture of the extent of paternal involvement.

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Data Availability Statement: The original contributions presented in this study are included in the article/supplementary material. Further inquiries can be directed to the corresponding author(s).

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