



Research article

Nationwide study of fathers' involvement in the rehabilitation of children with disabilities in the United Arab Emirates

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ABSTRACT

Purpose: Parental involvement is fundamental to the successful inclusion of children with disabilities in social, academic and communities' services. However, very little is known about UAE fathers' involvement in the support, care, and treatment, and facilitation of engagement in the social, academic, and recreational activities of children with disabilities. Importantly, the role of fathers in facilitating children's participations in social services within the community is unknown. The aim of the current study was to learn father's involvement in the life of children with disabilities in the United Arab Emirates (UAE).

Materials and methods: A total of 1027 parents (fathers = 469, and mothers = 558) completed the revised Fathers' Involvement in Development and Rehabilitation Scale, with three sub-scales (support, attitudes, and participation in training). The Statistical Package for Social Science (SPSS) version 29 was used to calculate means, t-tests, and moderation analyses.

Results: The mean scores showed high involvement of fathers; fathers rated themselves highly on attitudes and support towards their children with disabilities compared to mothers. Also, parental type (fathers vs mothers) significantly moderated the relationship between the support needs of children and paternal support to children with disabilities.

Conclusion: The study concludes with suggestions for targeted training programmes to enable fathers to better support the development of their children with disabilities.

1. Introduction

Parents' (i.e., biological father and mother) cooperation, involvement, and input is the single most important variance and factor, in having a comprehensive insight into the needs of a child with a disability [1–5]. Several studies have found a positive correlation in parental involvement in terms of treatment, motivation to seek care, improving parent-child relationship, improving teacher perception and even school achievement [4–9]. However, little is known about how fathers are involved in the nurturing, care, support and development of children with disabilities. More specifically, the father's experience, their challenges, and their involvement in terms of support, attitudes and the necessity of training in caring for children with disability/ies, to date have not been fully studied and identified. This is because, literature on parental involvement in the support and care of children with disabilities is

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overrepresented by experiences of mothers, and very little is known about fathers [10]. More importantly, there is no literature, information or data with regards to fathers' involvement in the support and care of children with disabilities in United Arab Emirates (UAE). Thus, this study aims to not only bridge the gap in literature but provide an insight into the role of fathers in lives of their children with disability/ies within a UAE context.

Globally, the vulnerability, discrimination, and limited participation of children with disabilities in essential services in society [11–18] creates a more urgent need for parents to be involved in the care and support of children with disabilities, and to create opportunities for their participation in essential services within society [19–22]. The concept of involvement encompasses both behavioural and affective attributes which contribute to parental participation in the development of children [23]. The behavioral attributes constitute support and initiatives taken by parents to enhance the development of their children [23]. This is vital in the lives of children with disabilities as they live with deficits which negatively affect their participation in society [18]. Consequently, parents are the agents of society which necessitates their prominence in the lives of children with disabilities [24,25]. The affective variable encompasses the interaction between parents and children with disabilities [23]. The interaction could be positive in the event parents embrace children with disabilities as equal members of the family. Affective attribute is fundamental because of the stereotypes and negative societal attitudes towards children with disabilities globally [12,13,15,26].

Studies comparing fathers and mothers' ratings on the former's involvement in the raising of children with disabilities are sporadic [27–44]. In terms of fathers' experiences, while limited studies have found positive experiences [28,29,40,45–48], others reported the challenges faced by fathers when it comes to the parenting of children [19,20,31,32,35,36,46,47,49–51]. Additionally, some studies have also compared the experiences of both fathers and mothers of children with disabilities [38,45,52,53]. The findings of the comparative studies are not linear; with some reporting lack of differences between both parents on stress [51] whereas others reported otherwise [45,52–54]. Among those that reported differences, they have reported that fathers were more likely to be less stressed compared to mothers [45,54]. This is probably expected as mothers are more likely to stay at home in the early days of development in the lives of children with disabilities than fathers [16].

In the UAE, there is lack of research on fathers' involvement. Available evidence has mainly drawn on mothers, reporting their caregiving experiences. For instance, Lamba et al. [16] found that some mothers of children with autism spectrum disorder in the UAE had been isolated by other people in the society, unable to access services, and having financial problems. Similarly, Dukmak [55] reported parents with children with disabilities were more likely not to seek rehabilitation services for their children with disabilities. Other studies have also reported limited health services for children with disabilities and poor knowledge of parents when it comes to ways to promote the health and wellbeing of children with disabilities [56,57]. These challenges extended to schools where teachers and other school professionals struggle to support children with disabilities [14,58]. While policies have been developed to help advance the lives of children with disabilities [14,58–60], more needs to be done in order to bridge the gap between children with disabilities and their typically developing peers in the UAE. One way to address this is perhaps knowing how fathers of children with disabilities facilitate the participation of their children with disabilities in rehabilitation and mainstream services in the UAE.

Based on the conceptualization of involvement, it could be argued that previous studies are yet to fully develop insight or accurately capture the phenomenon. It is evident that previous studies have mainly studied one (attitude towards children with disabilities) out of the three tenets of involvement. It would be fair to postulate here that our understanding of fathers' involvement in the raising of children with disabilities is limited. Disability rehabilitation encompasses intervention services developed to improve developmental outcomes for children with disabilities. This probably suggests that the involvement of fathers is vital to successful participation of children with disabilities in rehabilitation services. Indeed, WHO [18] advocated for community-based rehabilitation to capitalize on the various services available in communities to support the development of children with disabilities. The goals of community-based rehabilitation can only materialize in the event where fathers of children with disabilities are highly involved in the nurturing of their children with disabilities. This study, therefore, drew on fathers and mothers to compare the former's involvement in the raising of children with disabilities in the UAE.

1.1. Research context

The UAE is a federation of seven Emirates (Abu Dhabi, Ajman, Dubai, Fujairah, Ras Al Khaimah, Sharjah, and Umm Al Quwain) located in Western Asia [61]. The population of UAE is dominated by residents working in the country. Out of the nearly 10 million people living in the country, 80 % are residents with the remaining being citizens [62]. In terms of persons with disabilities, there is lack of statistics on current prevalence. However, according to Federal Competitiveness and Statistics Centre [63], as of 2020, over 5000 children with various types of disabilities were enrolled in special schools across the country.

At the turn of the 21st century, the UAE government joined the international community to develop systems to improve the living conditions of children with disabilities. For instance, some researchers have reported negative attitudes, discrimination, and exclusion of persons with disabilities in society [14,16,58]. There is a common belief that disability is caused by spirits [12]. This affects the acceptance of children with disabilities and their families in societies worldwide [12]. Additionally, some people in society are unwilling to socialize with families of children with disabilities [12,16]. In order to bridge the gap between society and families raising children with disabilities, the UAE government developed policies and laws such as the Wedeema Law, passage of Law No. 29 in 2006 and guidelines on the education and rehabilitation of persons with disabilities in the society [14,58]. In 2008, the UAE ratified the Convention on the Rights of Persons with Disabilities as per UN [14,58]. While issues of disabilities have been mainstreamed in public discourse in the UAE, families and their children continue to encounter challenges [12,16].

Studies related to parenting children with disabilities in the UAE confirm mothers' prominence in the lives of children with disabilities than fathers [11,16,56,57]. In the UAE and globally, gender roles are commonplace with women expected to perform

domestic responsibilities while men participate in outdoor work activities. Although the government is making attempts to promote equal rights to employment and participation of all persons in public activities, these gender roles remain entrenched [64,65]. With some mothers struggling to raise children with disabilities [16,56,57], it is necessary for attention to be paid to the involvement of fathers in the rehabilitation of children with disabilities. Due to gender norms in society [64,65], we reasoned that mothers would rate paternal involvement in the development of children with disabilities lower than the fathers themselves. Thus, this study attempts to

Table 1
Summary of demographic characteristics of participants.

Category (N = 1027)	Frequency	Percentage (%)
Parental type		
Mother	558	54 %
Father	469	46 %
Age (1024)		
21–30 years	69	7 %
31–40 years	497	48 %
41–50 years	368	36 %
51 years and above	90	9 %
Marital status		
Married	970	94 %
Single (divorced, separated or widowed)	57	6 %
Nationality (n = 1024)		
Citizens	592	58 %
Residents	432	42 %
Educational background (n = 1026)		
Secondary or below	522	51 %
Bachelor	415	40 %
Postgraduate	89	9 %
Employment status		
Unemployed	423	41 %
Employed	604	59 %
Monthly income (n = 1025)		
10,000 or less	421	41 %
11,000–20,000	267	26 %
21,000–30,000	201	20 %
31,000–40,000	64	6 %
41,000 and above	72	7 %
Years of marriage (n = 962)		
1–5 years	405	42 %
6–10 years	299	31 %
11–15 years	148	15 %
16–20 years	49	5 %
21 years and above	61	6 %
Age of children (n = 1013)		
1–5 years	335	33 %
6–10 years	466	46 %
11–15 years	136	13 %
16 years and above	76	8 %
Gender of children		
Male	686	67 %
Female	341	33 %
Disability type		
Intellectual disability	305	30 %
Autism spectrum disorder	415	40 %
Physical disabilities	87	8 %
Other disabilities (cerebral palsy, visual hearing etc)	88	9 %
Multiple disabilities	132	13 %
Severity of disability (n = 1025)		
Mild disability	213	21 %
Moderate disability	602	59 %
Severe disability	210	20 %
Support needs of children (n = 821)		
Minimal support	73	9 %
Moderate support	288	35 %
Substantial support	460	56 %
School enrolment (n = 821)		
Yes	358	44 %
No	463	56 %
Rehabilitation services (n = 821)		
Yes	638	78 %
No	183	22 %

contribute to system exploration of fathers' involvement in the raising of children with disabilities.

1.2. Current study

The need for the study is urgent and much needed, as the findings of studies conducted in Western countries cannot be extrapolated to the context of the UAE. In particular, the way of life, religion and culture is different from what pertains to Western contexts with regards to the rehabilitation of children with disabilities. Further, there are no studies in the UAE that have focused on mothers' involvement, fathers' involvement or experiences and the stress levels of both fathers and mothers when it comes to the raising of children with disabilities. This study explores fathers' involvement in the raising of children with disabilities in the UAE. Both fathers and mothers of children with disabilities completed the Fathers' Involvement in Development and Rehabilitation Scale (FIDRS) (authors et al., in press) which measures the extent of the former's involvement in the parenting of children with disabilities.

Overall, involvement was conceptualized as a product of fatherly support, participation in training, and attitude towards children with disabilities. The following hypotheses were tested.

Hypothesis I. Mothers will rate fathers low on their involvement in the rehabilitation of children with disabilities.

Hypothesis II. There is a relationship between paternal support, participation in training, and attitude towards children with disabilities.

Hypothesis III. Parental type (mothers vs fathers) will moderate significantly, the relationship between support, participation in training, and attitude towards children with disabilities.

Hypothesis IV. Parental type (mothers vs fathers) will moderate significantly, the relationship between other demographic variables, support, participation in training, and attitude towards children with disabilities.

The following questions will be addressed.

1. Is there a relationship between the tenets of involvement, attitude, support, and participation in training?
2. Is there a difference between fathers and mothers on the former's involvement (attitude, support, and participation in training) in the raising of children with disabilities in the UAE?
3. Will parental type (mothers vs fathers) moderate the relationship between support, participation in training, and attitude towards children with disabilities?
4. Will parental type (mothers vs fathers) moderate the relationship between other demographics, support, participation in training, and attitude towards children with disabilities?

2. Methods

2.1. Study participants

Mothers and fathers of children with disabilities were recruited nationally to develop a broad understanding of paternal involvement in raising children with disabilities, through online data collection. The majority of participants were recruited through text message that was sent by the funding institution of this research. This was the largest drive for recruiting mothers and fathers of children with disabilities in Abu Dhabi. Moreover, Zayed Higher Organization for People of Determination and Ministry of Community Development assisted in sharing the survey with parents. The inclusion criteria for this study were as follows: a) father or mother raising one or more children with disability; b) the child with disability is either enrolled in school or receiving services in a rehabilitation centre; c) the child has received a formal diagnosis of disability; and d) the father or mother has the capacity to consent to participate in the study. In this study, disability refers to sensory, physical, or cognitive impairments which interferes with the day-to-day living experiences of individuals.

Overall, 1027 fathers ($n = 469$) and mothers ($n = 558$) participated in the study nationwide. While 66 % were recruited from Abu Dhabi, 34 % were recruited from Dubai and Northern Emirates. Moreover, 58 % were citizens of UAE compared to 42 % who were residents working and raising children with disabilities (see [Table 1](#) for more details).

2.2. Instrument

A two-part instrument was used for data collection from mothers. The first part collected background data about the participants (see [Table 1](#) for details).

The second part was revised 27-item FIDRS, which was developed for this study to assess fathers' involvement in raising children with disabilities (authors et al., in press). The instrument was developed based on an extensive review of literature on each of the tenets which informed design of the items [23,31–44].

The instrument comprises three domains [support domain ($n = 14$), attitude towards parenting ($n = 9$), and participating in rehabilitation and training ($n = 4$)]. The support domain is made up of three sub-scales (personal support, learning and development, and well-being and development) and measures fathers' contribution at home and facilitating the participation of children with disabilities in societal activities. Second, the attitude has two sub-scales (belief towards parenting and beliefs towards support) and

measures the interaction between fathers and children with disabilities. Moreover, training is a unidimensional scale which measures initiatives taken by fathers to acquire knowledge/skills to contribute to the rearing of children with disabilities.

The FIDRS has a 5-point Likert scale with responses ranging from strongly disagree (1) to strongly agree (5) (see Appendix). A composite mean (sum of means divided by the number of items) score of at least 4 was interpreted as favorable involvement of fathers in the development of their children with disabilities.

Computation of reliability using Cronbach Alpha showed as follows: supporting children with disabilities (0.94), attitudes towards children with disabilities (0.93), and participation in training (0.96).

2.3. Procedure

The study was approved by the Social Science Ethics Review Committee at the UAE University (ERSC_2023_2467). Following institutional approval, approvals were sought from the Emirates Schools Establishment, Zayed Higher Organization for People of Determination, and Ministry of Social Development for permission to collect data from schools across the country. Formal invitation letters were sent to all special schools and rehabilitation centres for permission to conduct this study. Those that responded favourably were sent detailed information statement and online links to be forwarded to mothers for their completion. Parents of children with disabilities in Abu Dhabi were recruited using text messages sent by the funder of this 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. Also, they were assured that the data collected would not be made available to any external body and would be used only for the research purpose. Five participants were randomly selected and given a gift card for participating. All the fathers and mothers who participated consented to participating in this study.

2.4. Data analysis

The SPSS version 29 software was used to analyze data, which was assumed to be normally distributed given the sample size [66].

To answer research question 1, the Pearson Moment correlation co-efficient was computed to understand the relationship between the three tenets, attitudes, support, and participation in training. The correlations were interpreted as follows: small (0.10 - 0.30), medium (0.31 - 0.49) and large (at least 0.50) [67].

To answer research question 2, *t*-test was computed [67] to understand the association between parental type and tenets of involvement. Before this, mean scores were calculated to understand the level of paternal involvement in the raising of children with disabilities. Homogeneity of variance was observed to ensure that they were not violated [67]. Also, the magnitude of weight of results was assessed through the observation of effect size (Cohen's *d*) interpreted as follows: small (0.01 - 0.05), medium (0.06 - 0.09), and large (above 0.1) [67].

To answer research questions 3 and 4, moderation analyses were computed [68]. Moderation Method 1 was used for the computation. For research question 3, parental type was operationalized as a moderator, attitude as an outcome variable and the two other tenets, support and participation in training, as independent variables. For research question 4, parent type was used as a moderator, demographic variables as independent variables and the three tenets [attitude, support, and participation in training] as dependent variables. Here, demographic variables which correlated with attitudes were included in the computation. This was based on Field's [66] reasoning that inclusion of variables into models should be based on reasoning.

3. Result

3.1. Level of paternal involvement

Calculation of mean scores yielded the following results: supporting children with disabilities ($M = 4.47$, $SD = 0.63$), attitudes towards children with disabilities ($M = 4.23$, $SD = 0.83$), and participation in training ($M = 4.01$, $SD = 0.70$).

3.2. Association between parental type on paternal involvement

Moreover, computation of independent sample *t*-test showed as follows: support for children with disabilities [$t(1025) = -8.62$, $p = 0.001$, with a moderate effect size, Cohen's $d = 0.54$, with a small effect size, Cohen's $d = 0.17$], attitudes towards children with disabilities [$t(1024) = -2.73$, $p = 0.003$] and participation in training [$t(1025) = -0.152$, $p = 0.88$, with a very small effect size, Cohen's $d = 0.01$].

From the mean scores, fathers rated themselves more highly than mothers on support for children with disabilities [mothers, $M = 4.32$, $SD = 0.72$; Fathers, $M = 4.65$, $SD = 0.45$] and attitudes towards children with disabilities [mothers, $M = 4.16$, $SD = 0.86$; Fathers, $M = 4.30$, $SD = 0.78$].

3.3. Relationship between tenets of involvement

Computation of the Pearson moment-correlation co-efficient yielded the following results: support and attitude ($r = 0.66$, $p = 0.001$), support and participation in training ($r = 0.21$, $p = 0.001$), and attitude and participation in training ($r = 0.41$, $p = 0.001$).

3.4. Moderation analyses

Moderation analyses were computed to explore the effect of parental type on the relationship between the tenets of involvement and the demographic variables.

3.5. Parental type as moderator of support, participation in training and attitude

First, parental type moderated the relationship between support and attitude towards children with disabilities, $b = -0.31$, $t = -6.63$, $p = 0.001$, 95 % CI [-0.40, -0.22]. Both parental type [$b = 18.24$, $t = 6.12$, $p = 0.001$, 95 % CI (12.39, 24.09)] and support [$b = 0.96$, $t = 15.72$, $p = 0.001$, 95 % CI (0.84, 1.08)] had significant impact on attitude towards children with disabilities. On the moderator, it was observed that when participants were mothers [$b = 0.66$, $t = 28.35$, $p = 0.001$, 95 % CI (0.61, 0.70)] or fathers [$b = 0.35$, $t = 8.69$, $p = 0.001$, 95 % CI (0.27, 0.43)], significant relationship was observed between support and attitude towards children's disabilities. From Fig. 1, it could be observed that both fathers and mothers did not differ on support. Although the plots showed that attitudes plummeted in comparison to support, mothers rated fathers highly compared to the fathers themselves.

Also, parental type moderated significantly, the relationship between participation in training and attitudes towards children with disabilities, $b = 0.74$, $t = 4.65$, $p = 0.001$, 95 % CI [0.42, 1.05]. Individually, though parental type [$b = -10.59$, $t = -4.10$, $p = 0.001$, 95 % CI (-15.66, -5.52)] made significant contribution in the variance in paternal attitudes, participation in training did not [$b = -0.13$, $t = -0.47$, $p = 0.64$, 95 % CI (-0.67, 0.41)]. Specifically, on the moderator, it was observed in the event participants were either mother [$b = 0.61$, $t = 4.73$, $p = 0.001$, 95 % CI (0.36, 0.86)] or father ($b = 1.35$, $t = 14.55$, $p = 0.001$, 95 % CI (1.17, 1.53)), significant relationship was observed between attitudes and participation in training (see Fig. 2).

3.6. Moderators of other demographics and support for children with disabilities

First, participant's type was used as a moderator to explore its interactive effect on the relationship between other demographics and fathering support for children with disabilities (see Table 2). First, participant's type moderated the relationship between marital status and support for children with disabilities, $\beta = 13.67$, $t = 5.04$, $p = 0.001$, 95 % CI (8, 34, 18, 99). Individually, when participants were mothers, significant relationship was found between marital status and support to children with disabilities, $\beta = -15.45$, $t = -12.65$, $p = 0.001$, 95 % CI (-17.85, -13.05). Conversely, in the event participants were fathers, no relationship was found between marital status and support for children with disabilities, $\beta = -1.78$, $t = -0.74$, $p = 0.46$, 95 % CI (-6.53, 2.97). From Fig. 3, it could be observed that fathers rated themselves to be more supportive than mothers of children with disabilities.

Second, parental type moderated the relationship between support needs of children and paternal support to children with disabilities, $b = 3.10$, $t = 3.05$, $p = 0.002$, 95 % CI [1.11, 5.08]. In the event participants were mothers, a significant relationship was found between support needs and fatherly support to children with disabilities, $b = -1.76$, $t = -2.40$, $p = 0.02$, 95 % CI (-3.25, -0.30). Likewise, in the event participants were fathers, no relationship was found between support needs and paternal support to children with disabilities, $b = 1.32$, $t = 1.94$, $p = 0.06$, 95 % CI [-0.01, 2.65]. From Fig. 4, it could be observed that both mothers and

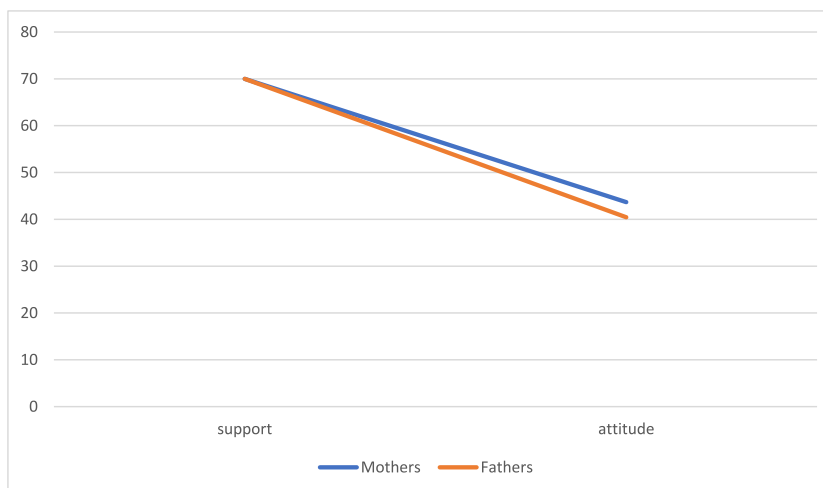


Fig. 1. Interaction effect of parental type on relationship between attitude and support.

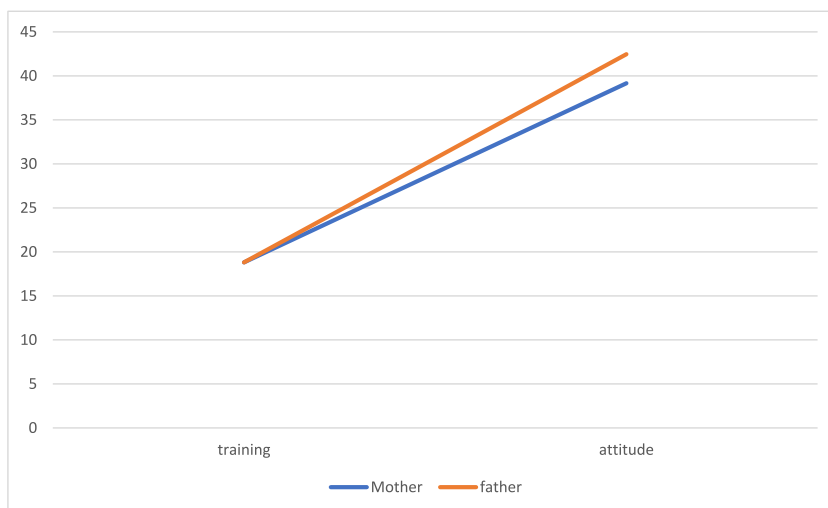


Fig. 2. Interaction effect of parental type on relationship between attitude and training.

Table 2
Parental type as moderator of other demographics and support.

Category	Beta	S.E.	t	p	Confidence interval	
					Lower	Upper
Age	1.22	0.72	1.69	0.09	-0.20	2.64
Marital status	13.67	2.71	5.04	0.001 ^a	8.35	18.99
Nationality	0.97	1.09	0.90	0.37	-1.16	3.11
Educational background	-1.41	0.83	-1.71	0.09	-3.03	0.21
Employment status	-0.98	1.37	-0.72	0.47	-3.67	1.71
Income status	-0.49	0.44	-1.11	0.27	-1.36	0.38
Years of marriage	-0.31	0.47	-0.65	0.52	-1.24	0.62
Age of children	0.11	0.63	0.18	0.85	-1.11	1.34
Gender of children	0.82	1.13	0.73	0.47	-1.40	3.04
Disability type	-0.66	0.41	-1.63	0.10	-1.46	0.14
Severity of disability	1.09	0.84	1.31	0.19	-5.55	2.74
Support needs of children	3.10	1.01	3.05	0.002 ^a	1.11	5.08
School enrolment	2.72	1.35	1.26	0.21	-0.94	4.36
Rehabilitation services	-1.00	1.80	-0.55	0.58	-4.54	2.54

^a $p \leq .001$.

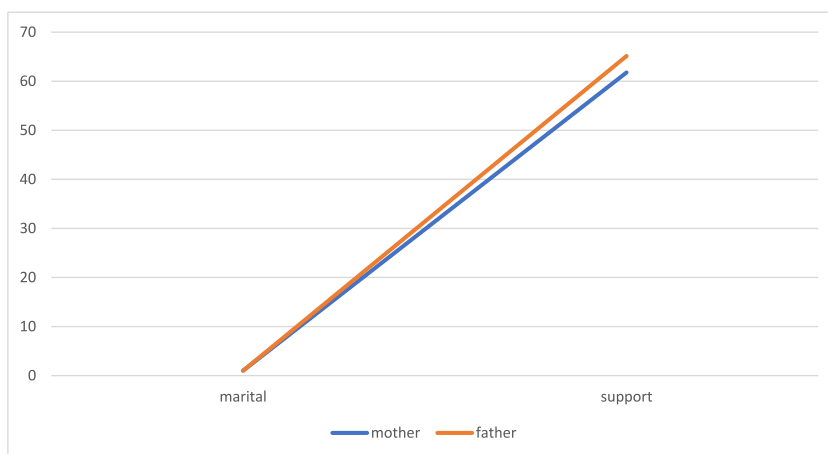


Fig. 3. Interaction effect of parental type on relationship between marital status and support.

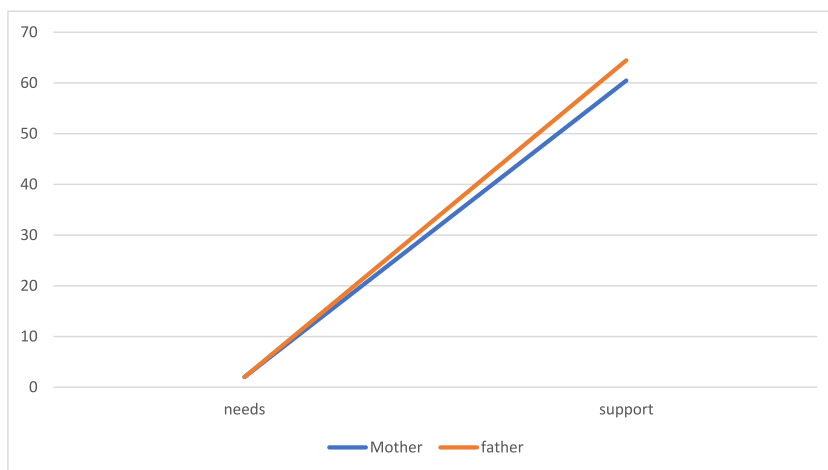


Fig. 4. Interaction effect of parental type on relationship between level of needs of children and support.

fathers did not differ on support needs however, the latter rated themselves highly on support than the former.

3.6.1. Moderators of other demographics and attitudes towards children with disabilities

Second, parental type was operationalized as a moderator to ascertain its relationship between other demographics and attitude towards children with disabilities (see Table 3). Here, parental type moderated the relationship between marital status and attitudes towards children with disabilities, $b = 9.65, t = 3.97, p = 0.001, 95\% \text{ CI } [4.88, 14.41]$. Individually, both marital status and parental type significantly impacted on fatherly attitudes towards children with disabilities. In the event participants were mothers, significant relationship was found between marital status and attitudes towards children with disabilities, $b = -10.95, t = -10.02, p = 0.001, 95\% \text{ CI } [-13.10, -8.81]$. Additionally, in the event participants were fathers, no significant relationship between marital status and attitudes towards children with disabilities, $b = -1.31, t = -0.60, p = 0.55, 95\% \text{ CI } [-5.56, 2.94]$. From Fig. 5, it could be observed that fathers rated themselves more positively than mothers.

Moreover, parental type moderated the relationship between level needs and attitude towards children with disabilities, $b = 2.31, t = 2.60, p = 0.01, 95\% \text{ CI } [0.57, 4.06]$. Individually, when participants were fathers, relationship was found between level needs and attitudes towards children with disabilities, $b = 1.18, t = 1.98, p = 0.05, 95\% \text{ CI } [0.01, 2.35]$. Conversely, when participants were mothers, there was no significant relationship between level needs and attitudes towards children with disabilities, $b = -1.13, t = -1.71, p = 0.09, 95\% \text{ CI } [-2.43, 0.17]$. From Fig. 6, it could be observed that as the needs of children increase, fathers were high on attitudes towards children with disabilities compared to mothers.

3.7. Moderators of other demographics and participation in training

Parental type was used to ascertain its impact on the relationship between demographic variables and paternal participation in training (Table 4). To begin with, parental type moderated the relationship between nationality and participation in training, $b = -0.71, t = -1.99, p = 0.05, 95\% \text{ CI } [-1.40, -0.01]$. In the event participants were fathers, no difference was found between

Table 3
Parental type as moderator of other demographics and attitudes.

Category	Beta	S.E.	t	p	Confidence interval	
					Lower	Upper
Age	1.05	0.63	1.68	0.09	-0.18	2.28
Marital status	9.65	2.43	3.97	0.0001**	4.88	14.41
Nationality	-1.58	0.94	-1.68	0.09	-3.43	0.27
Educational background	-0.64	0.72	-0.89	0.37	-2.06	0.77
Employment status	-1.13	1.20	-0.95	0.34	-3.48	1.22
Income status	0.24	0.39	0.63	0.53	-0.51	1.00
Years of marriage	0.17	0.40	0.43	0.67	-0.62	0.96
Age of children	0.54	0.55	0.99	0.32	-0.53	1.61
Gender of children	0.86	0.99	0.87	0.39	-1.08	2.80
Disability type	-0.56	0.36	-1.56	0.12	-1.25	0.14
Severity of disability	0.87	0.73	1.20	0.23	-0.55	2.30
Support needs of children	2.31	0.89	2.60	0.01**	0.57	4.06
School enrolment	0.35	1.19	0.30	0.77	-1.98	2.68
Rehabilitation services	-1.59	1.58	-1.01	0.31	-4.69	1.51

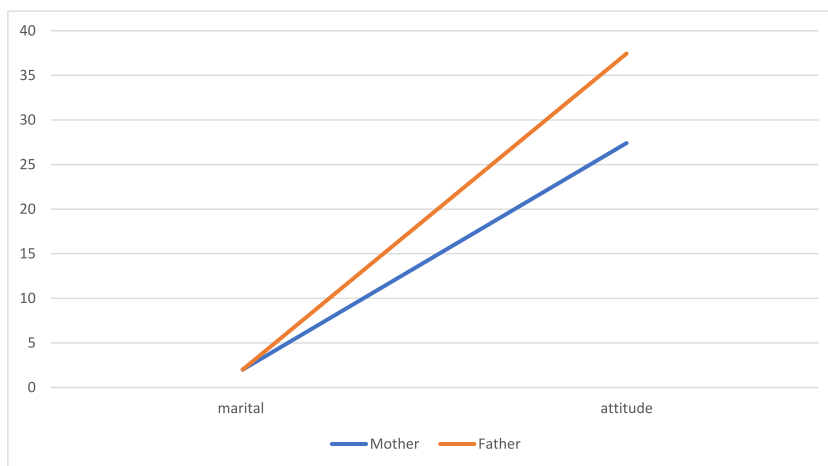


Fig. 5. Interaction effect of parental type on relationship between marital status and attitudes.

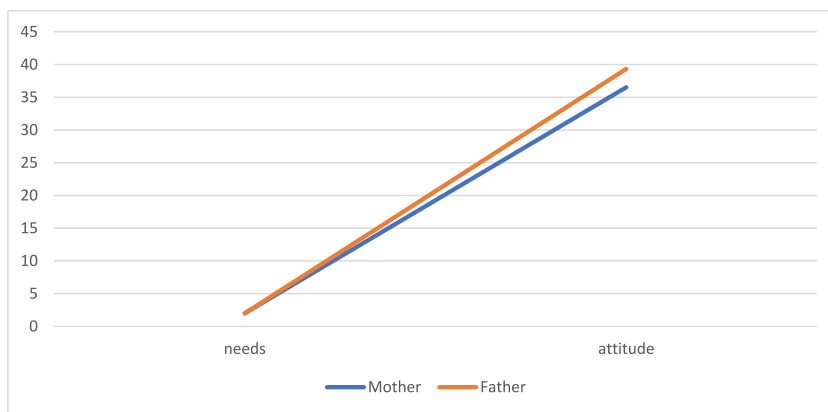


Fig. 6. Interaction effect of parental type on relationship between level of needs and attitudes.

Table 4
Parental type as moderator of other demographics and participation in training.

Category	Beta	S.E.	t	p	Confidence interval	
					Lower	Upper
Age	0.11	0.24	0.48	0.63	-0.35	0.58
Marital status	0.03	0.95	0.04	0.97	-1.84	1.90
Nationality	-0.71	0.36	-1.99	0.05*	-1.40	-0.01
Educational background	-0.67	0.27	-2.51	0.01**	-1.20	-0.15
Employment status	-0.10	0.45	-0.23	0.82	-0.98	0.78
Income status	-0.17	0.14	-1.20	0.23	-0.46	0.11
Years of marriage	-0.03	0.15	-0.17	0.86	-0.33	0.28
Age of children	0.39	0.20	1.93	0.06	-0.01	0.79
Gender of children	-0.17	0.37	-0.47	0.64	-0.90	0.55
Disability type	0.11	0.13	0.86	0.39	-0.15	0.38
Severity of disability	0.43	0.27	1.58	0.11	-0.10	0.97
Support needs of children	0.16	0.32	0.50	0.61	-0.47	0.80
School enrolment	-0.17	0.43	-0.40	0.69	-1.02	0.67
Rehabilitation services	-1.06	0.57	-1.86	0.06	-2.18	0.06

nationality and participation in training. However, when participants were mothers, significant differences were found between nationality and participation in training, $b = -0.80$, $t = -3.11$, $p = 0.002$, 95 % CI [-1.30, -0.29]. From Fig. 7, it was observed that fathers rated themselves highly on participation in training than mothers.

Moreover, parental type moderated the relationship between educational background and paternal participation in training, $b =$

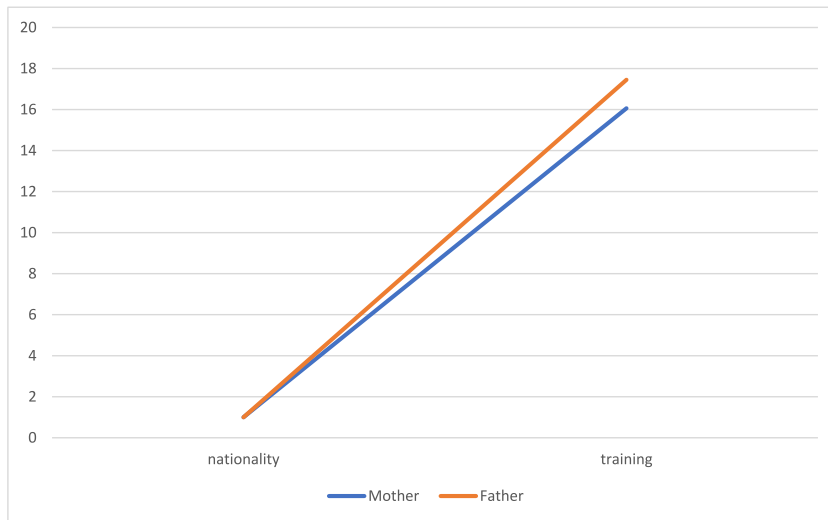


Fig. 7. Interaction effect of parental type on relationship between nationality and training.

-0.67, $t = -2.51$, $p = 0.01$, 95 % CI [-1.20, -0.15]. Mothers had no significant interactive effect on the relationship between educational background and training, $b = -0.05$, $t = -0.23$, $p = 0.81$. conversely, fathers significantly moderated the relationship between educational background and paternal training, $b = -0.72$, $t = -3.86$, $p = 0.0001$, 95 % CI [-1.09, -0.35]. From Fig. 8, mothers rated fathers highly on the participation of fathers in training than themselves.

4. Discussion

In the study reported here, an attempt was made to compare the ratings of both fathers and mothers on the former’s involvement in the raising of children with disabilities. The scant literature on the phenomenon as well as the resolve of the UAE government to create a conducive environment for the participation of individuals with disabilities in society, necessitated this study. While two hypotheses (Hypotheses I and II) were fully supported, the findings provided partial support for two other hypotheses (Hypotheses III and IV). For instance, in relation to hypothesis 1, the findings showed that fathers rated themselves highly on two out of the three tenets, support and attitudes, compared to mothers. Although the mean scores showed positive attitudes and paternal support to children with disabilities, the differences between mothers and participants probably suggest that mothers expect more from their spouses in the parenting of children with disabilities. There is a possibility that mothers who took part in this study were overburdened by caregiving responsibilities [16,56,57] which is cultural expectation of females in the UAE society. This probably has placed an additional caregiving burden on them. On top of that, mothers expect more from fathers in relation to their attitudes towards children with disabilities. This is particularly important in the UAE context where there exist negative attitudes towards children with disabilities

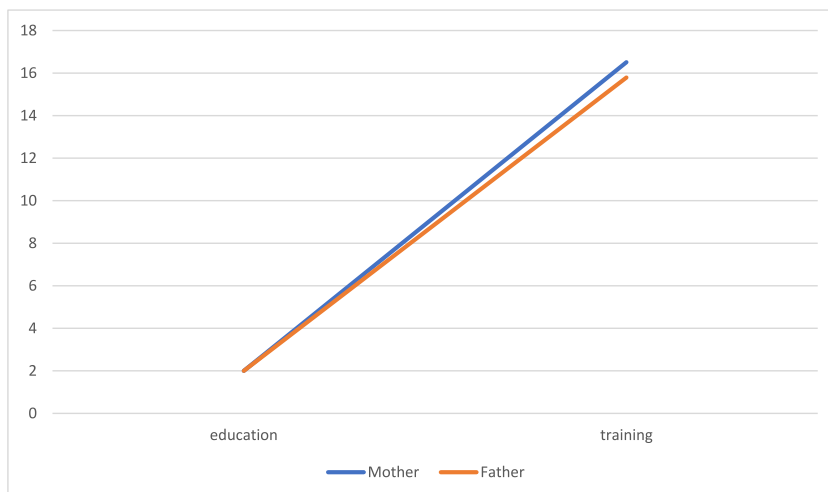


Fig. 8. Interaction effect of parental type on relationship between education and training.

[12,69]. In order to enhance the participation of fathers in the development of children with disabilities, fathers could be engaged on the nature of support they could provide as well as changing attitudes towards their children with disabilities.

The study findings provided support for **Hypothesis II**, with small to large relationship found between the tenets of involvement. This finding has confirmed the proposition that parental involvement in the education of children is a multifaceted construct [23,70,71]. In the UAE context, the finding probably suggests that in the event the policymakers intend to design intervention programmes to encourage participation of fathers in the rehabilitation of children with disabilities, the three areas could be considered. Mothers continue to grapple with the raising of children with disabilities [16,69]. Thus, shared caregiving responsibilities between fathers and mothers have been recommended [33], however, discussions on this phenomenon are yet to be promoted in this UAE. Similarly, frontline discussions on intervention programmes to encourage the participation of fathers and changing attitudes are unavailable. Going forward, it would be necessary for policymakers to reflect the three tenets in training programmes developed to enhance the paternal participation in the development of children with disabilities.

The study provided support for **Hypothesis III**, with parental type moderating the relationship between dependent (attitudes) and independent variables, support, and participation in training. For example, the result showed that as paternal support to children with disabilities goes up, paternal attitude towards children with disabilities goes down. Indeed, mothers rate fathers more favorable attitude than they themselves (see Fig. 1). Furthermore, the results showed that when paternal participation in training is low, fathers rated themselves highly on attitude towards their children than the fathers (see Fig. 2). There is an apparent lack of linearity regarding the extent of participation of fathers in the raising of children with disabilities. For instance, fathers may assume that they are supporting the development of their children, however, they could still harbor negative attitudes towards their children. Likewise, fathers might not be involved in training to contribute to the development yet, think that they hold positive attitudes towards their children. The lack of uniformity probably suggests lapses in the extent of involvement of fathers in the raising of children with disabilities. In disability studies, there is emphasis on quality intervention provided by practitioners or parents towards the development of children with disabilities. More needs to be done to strengthen and empower fathers to contribute to the development of children with disabilities in the UAE.

Hypothesis IV was also partially supported by the study findings, with parental type moderating the relationship between some demographic variables and paternal involvement in the development of children with disabilities. The demographic variables have given useful pointers as to where policymakers could consider in policies and intervention programmes. For instance, notable among them was interactive effect of parental type on the relationship between marital status, attitude, and support. Similarly, regardless of the level of needs of children, fathers indicated more positive attitudes and support than mothers. Similar observations were made on the moderation effect of parental type on level education and paternal involvement in the raising of children with disabilities. The UAE is actively searching for ways to enhance the development of children with disabilities [14,58]. The study has showed that targeted training could be provided to parents of children with disabilities.

4.1. Study limitation and direction for future research

The study reported here is not without limitations. First, the participants were skewed towards those who had enrolled their children with disabilities in special schools or who were receiving services at rehabilitation centres. The mothers of children with disabilities outside these settings were excluded and, thus, it is impossible to generalize the findings. However, there are common systems and a shared culture between those who took part in this study and those who were excluded. The findings reported here could mirror the experiences of mothers who were considered for participation. Second, the study was guided by self-reported experiences of mothers and thus is susceptible to response bias. More so, it was beyond the scope of this study to verify the claims reported by participants. Mothers were provided an information statement, and they rated fathers' involvement in their preferred language of choice or fluency. There is potential that they provided accurate accounts of their spouses' involvement in the raising of children with disabilities. Notwithstanding, a future study could draw on service providers to understand their paternal involvement in the rehabilitation of children with disabilities. This could provide a clearer picture of the extent of fathers' involvement in raising children with disabilities.

5. Conclusion and implication for practice

This study presents comparative ratings of mothers and fathers regarding former's involvement in the raising of children with disabilities. Four hypotheses were tested in this study – two support and two partially supported by the study findings. Interdependencies were found between the tenets of involvement, attitude, support, and participation in training. While the study participants reported high involvement of both fathers in the nurturance of children with disabilities, fathers rated themselves highly on attitude and support to children with disabilities. Parental type also moderated the relation between the tenets as well as some demographic variables and its relationship with the tenets of paternal involvement. The study has added to our knowledge on the involvement of fathers in the rehabilitation of children with disabilities, drawing on rating from both mothers and fathers.

The study findings have provided useful guidelines which could be considered by policymakers in the UAE and probably beyond. For instance, in developing policies to promote the involvement of fathers in the rehabilitation of children with disabilities, consideration could be given to changing their attitudes towards children with disabilities. More so, policymakers could design training programmes on behaviour management, support and best parenting strategies, for fathers of children with disabilities. The findings have provided support for targeted training which could be offered to fathers raising children with disabilities in UAE. Based on the study findings, consideration could be given to variables such as educational background of parents and marital status. Consideration

of these variables in future training and intervention programmes could enhance fathers' involvement and thus, advancing the lives of children with disabilities in the UAE.

Ethics approval and consent to participate

All methods were carried out in accordance with relevant guidelines and regulations. The Social Sciences Ethics Committee at United Arab Emirates University reviewed and approved the study protocols (ERSC_2023_2467). All participants signed or thumb printed on the informed consent form before participating in this study.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analysed during the current study available from the corresponding author on reasonable request.

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CRedit authorship contribution statement

Ahmed Mohamed: Writing – review & editing, Writing – original draft, Validation, Supervision, Project administration, Methodology, Data curation, Conceptualization. **Maxwell Peprah Opoku:** Writing – original draft, Validation, Methodology, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Shamsa Almarzooqi:** Writing – original draft, Supervision, Project administration, Investigation. **J-F:** Writing – review & editing, Writing – review & editing. **Haseena Shah:** Formal analysis, Data curation.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Ahmed Hemdan reports financial support was provided by Abu Dhabi Early Childhood Authority (ECA). If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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