



Depression, Stress and Anxiety among Parents of Sons with Disabilities

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Abstract

Background: The prevention of depression, stress, and anxiety is an enormous concern of the World Health Organization and it has been a topic of research over the last decades. However, studies with families with sons or daughters with disabilities are scarce, which stresses out the need to develop scientific research in this area. It is of paramount importance to understand the impact of having a child with disability, so that effective strategies of action can be delineated.

Goals: This study aims to assess depression, stress and anxiety of parents with sons or daughters having intellectual deficit, multi-deficiency or autism, considering gender, age of both parents and sons/daughters, as well as education level of the parents.

Methods: With a cross-sectional observational study, data were collected at schools and at special education institutions through self-administered questionnaires. Two different groups of participants were included in the sample: parents of sons/daughters having intellectual deficit, multi-deficiency or autism, and parents of sons/daughters without disability. Participants were recruited according to a random stratified (by sons/daughters' age and gender) random sampling. The Depression Anxiety Stress Scale (DASS-21) was administered to both groups of parents, with the collaboration of special education teachers and school psychologists. Data were analysed using SPSS version 21.0. Descriptive and parametric inferential statistic (t-tests and ANOVA) were performed. Effect sizes based on differences between means were also calculated.

Results: Overall, 871 participants were enrolled in the study: 403 parents (227 mothers and 176 fathers; 21 to 81 years old, $M = 45$) of sons/daughters having a disability, and 468 parents (242 mothers and 226 fathers; 25 to 79 years old, $M = 43$) of sons/daughters without disabilities. Most of the children had intellectual disabilities ($n = 206$), followed by autism ($n = 143$) and multi-deficiency ($n = 52$). Parents with children/youth with disabilities showed higher levels of anxiety, depression and stress than the other parents. Levels of anxiety, depression and stress are associated with disabled sons/daughters' age (higher levels associated to older ages) and negatively with parent's education level (higher levels associated to lower education).

Discussion: These results highlight the need to more deeply reflect about the necessity of designing intervention programs targeting the development of coping strategies to prevent or minimize parent's anxiety, depression and stress. This type of intervention is of key importance to capacitate families to cope with these adverse conditions, thus promoting the mental health and psychological wellbeing of parents and disabled children.

Keywords: Depression, Stress, Anxiety, Children, Disability.

Introduction

The prevention of depression, stress and anxiety is a main concern of the World Health Organization (OMS; 2017) and it has been a topic of research over the last

decades. However, studies with families having disabled dependents are scarce, stressing out the need to develop scientific research in this area. It is of paramount importance to understand the impact of the birth of a child with disabilities for the

family, so that effective strategies of action can be delineated.

The current systemic models and theories sustain a definition of 'family' as a system, which can only be correctly understood from the holistic point of view (Relvas, 1996), based on two main aspects. The first is that no family is the same as another and, since family is a system, any change in one of its members affects the whole (Assunção & Sprovieri, 1993). A second premise of this systemic perspective refers to its intrinsic complexity, considering family as part of wider contexts, integrated into the surrounding community and, more broadly, into the society as a whole.

The family is the first relational context of a child with disability, being the major determinant of behaviour and personality formation (Buscaglia, 2006). The family structure is dynamic and goes from stable phases to less stable ones. These moments of transformation imply great stress and anxiety in the family life and are typically referred to as moments of crises (Martins & Couto, 2014, Pereira & Kohlsdorf, 2014). Independently of the stage of development of the family, the birth of a disabled child is most usually perceived as a particularly problematic moment of crisis (Da Paz & Wallander, 2017). The birth of a disabled child is associated with frustration, physical and psychological stress, anxiety, and perceived inability to cope with the situation in an appropriate way (Caruso, 2017). Within this context, the adaptation of the family to the specific needs of the child is extremely important since the way the child is included in the group will ultimately affect his or her development (Bronfenbrenner, 1999).

The increased level of stress and anxiety on parents can, in turn, increase their likelihood of having depression, with a relevant negative impact on their quality of life (Caruso, 2017; Pereira & Kohlsdorf, 2014; Pereira & Nobrega, 2011)

Depression and anxiety in parents with children having disabilities

The birth of a child causes structural changes and represents a stressful event in any family. The vulnerability of a child with a disability or at risk of atypical development may lead to an increase in the levels of parental and family stress, implying an additional effort in terms of adaptation and organization of the family system (Alves & Nex, 2015; Pereira & Nóbrega, 2011).

Studies conducted with families with children having disabilities identified three types of stressors (Howard, Williams, Port, & Lepper, 2001): acute factors, related to periodic incidents associated with the child's disability; chronic factors, including concerns about the future, financial limitations and acceptance of individual differences by society; and transition factors, appearing in major life moments (mainly, at transition between stages of the life cycle). According to the authors, these stress factors influence the type of relationships that parents establish with their children, also depending (obviously) on the characteristics of the child.

Scientific research has put greater attention to mothers than to fathers. Mothers of children with disabilities have higher levels of stress than fathers (Dyson, 1997; Hornby, 1995; Lamb & Billings, 1997; Sloper et al., 1991, as cited in Pereira-Silva & Dessen 2001). Yilmaz, Yildirim, Turan, Kiliç, and Ozer (2013) evaluated psychological indicators of parents of 35 children with moderate disability. Parents' anxiety, depression, and quality of life were assessed through the BDI, the State-Trait Anxiety Inventory (STAY) and the Nottingham Health Profile. The level of trait anxiety of mothers was higher comparing to fathers; the levels of state anxiety do not differ between parents; fathers presented higher values of anxiety, depression and lower quality of life before a male child whereas mothers did not differ according to the sex of the disabled child. Mothers who spend more time caring for their children were more depressed and had lower quality of life. Also, Isa et al. (2013) shown that mothers with children with disabilities had a less adequate

functioning compared to fathers. In another study, Olsson and Hwang (2001) reported that fathers presented lower rates of depression than mothers. The fact that mothers with children with disabilities are more likely to describe symptoms of depression than fathers (Bailey, Golden, Roberts, & Ford, 2007) may explain this gender difference, together with the fact that mothers are usually responsible for most of the additional care that needs to be given to the disabled child. On the other hand, according to Silva and Dessen (2001), fathers show less satisfaction with family life, which influences family interactions and marital relationships.

Different studies have revealed marked differences between mothers of children with disabilities and mothers of children without disabilities (Shapiro et al., 1998; Slonims & McChonachie, 2006, cited by Pereira-Silva & Dessen, 2006). Pereira-Silva and Dessen (2006) reported that mothers of children with disabilities are more affected by the provision of care and obligations with the child than mothers of children having no disabilities, being this overload a factor that generates stress and less positive feelings, often generating feelings of anxiety and depression. The same authors reported that stress depends on the different types of disability and vulnerability of the child.

Stress is indeed one of the most commonly studied variable in mothers of children with disabilities (Bryne, Cunningham, 1985, as cited in Pereira-Silva & Dessen, 2004; Caruso, 2017). As already stated, different studies revealed that these mothers experience more stress than mothers of children with a normal development (Chouhan, Singh, & Kumar, 2016; Pereira-Silva & Dessen, 2004). For example, Shin and Nhan (2009), in a comparative study regarding stress and perceived social support of mothers of children with or without disabilities, found that mothers of children with disabilities experience more stress and more health disorders than the other mothers. However, other studies found that the parents of children with developmental disabilities did not differ significantly from parents of children without disabilities in terms of parental stress, social support or family functioning (Al-Farsi, Al-Farsi, Al-Sharbaty, & Al-Adawi, 2016, Dyson, 1997, Hayes, & Watson, 2013). Finally, other

studies reported differences in terms of family stress according to the type of diagnosis. For example, parents of children with autism showed higher levels of stress than parents of children with Trisomy 21 (Holroyd & McArthur, 1976, as cited in Pereira, 1996). The sociodemographic characteristics and financial status of the family play an important role on the adjustment of families to the condition of raising disabled children. The results of the study by Llewellyn, McConnell, Gething, Cant, and Kendig (2010) revealed worse mental health among younger parents of children having disabilities. The authors examined health status and coping strategies in older Australian parents when caring for a dependent adult with intellectual disability. Overall, the results did not differ significantly from those of the Australian general population. Members of socioeconomic lower-class families experience more severe stress, also impacting the ability of parents to interact with their children (Rosenberg, 1979). In a longitudinal study by Chess and Kron (1978, as cited in Pereira, 1996), it is suggested that middle-class professions are associated with higher levels of family stress. This is especially relevant when considering that the existence of a disabled member creates additional financial needs resulting from increased consumption and a decline in productive capacity (Turnbull & Turnbull, 1990).

When applying the Brief Family Distress Scale to parents of children with autism spectrum disorders, Weiss and Lunsky (2011) showed a positive association between coping strategies and quality of life of the caregiver, and a negative association between stressors (e.g., severity of aggressive behavior, negative life events) and caregiver's mental health problems.

Cherubini, Bosa, and Bandeira (2008) analyzed the prevalence of symptoms of anxiety and depression among parents of children with X-fragile syndrome, children with Trisomy 21 and children with typical development. They identified a higher prevalence of agoraphobia and panic disorder in mothers group with X-fragile syndrome; in the group of mothers with Trisomy 21, depression and generalized anxiety were the most prevalent disorders; depression also appeared in

the group of mothers with typical development, but with lower prevalence.

Olsson and Hwang (2001) evaluated depression indicators using the Beck Depression Inventory (BDI) in 216 families with children with autism and/or intellectual disability. The results showed that the effort to provide care and attention to children with disabilities lays parents at risk of depression. Mothers of children with autism have attained higher BDI scores than mothers of children with other-than autism intellectual disabilities. Also Chouhan, Singh and Kumar (2016) showed that diagnosis of autism or serious behavioural disorders was highly associated with symptoms of depression in parents. Their study also revealed that it is more difficult for mothers to cope with child's behavioural disfunctions, associated to the disability, than with the physical or cognitive aspects of the disability.

Chou, Pu, Fu, and Kröger (2010) evaluated symptoms of depression and health status in 350 mothers (55 years of age or older) having adult descendants with intellectual disabilities. They concluded that 60% to 70% of the caregivers had symptoms of depression. Self-reported physical health was the variable most strongly associated with symptoms of depression.

Not all news is bad news. It has been shown to exist is a negative correlation between family overload in caregiving and the age of the children (Hsieh et al., 2009) suggesting that family members gradually adapt as their children grow up.

The present study aims to study anxiety, depression and stress among parents of sons or daughters with a disability (intellectual deficit, multi-deficiency or autism) versus parents having of sons/daughters without disabilities. This comparison was done taking into account parents' gender, age, educational level and area of residence, as well as according to gender and age of the child with disabilities.

Methods

This is an observational cross-sectional study with data collection through self-administered questionnaires.

Participants and sampling

A sample composed by fathers and mothers with sons/daughters with disabilities was recruited from the overall population of 3 979 users of the Regional Directorate for Special Education and Rehabilitation of the Autonomous Region of Madeira, Portugal (registered population within the previous 12 months). It was a random stratified sample by types of disabilities, age, and gender of sons/daughters with disabilities. Three types of disabilities were considered: intellectual deficit, autism, and multi-deficiency. These types of disabilities were chosen because they are the three most prevalent ones among youngsters in Portugal, according to data from Regional Directorate for Special Education and Rehabilitation of the Autonomous Region of Madeira database about registered disabled children (Fernandes, 2014).

A comparative random and stratified (by sons/daughters' gender and age) sample of parents with sons/daughters without disabilities was also recruited from public schools of the Autonomous Region of Madeira, Portugal, at the same time.

Instruments and procedures

The DASS-21 and a sociodemographic questionnaire were used for data collection. The DASS-21 is a questionnaire that measures (by self-report assessment) three constructs in individuals over 17 years of age: depression, anxiety, and stress (Lovibond & Lovibond, 1995). It is a good research and clinical measure, especially when we need to assess the complex relations between emotional disorders and environmental stressors, because it allows a differentiation between the three constructs (Daza, Novy, Tanley, & Averill, 2002, as cited in Pais-Ribeiro, 2004).

DASS-21 is composed of 21 items, seven per subscale. Respondents answer each item with a 4-point Likert-type scale, ranging from 0 (*"Did not apply to me at all"*)

to 3 ("Applied to me very much or most of the time"). Items comprising the scales are summed and doubled to be equivalent to the longer DASS-42 version. The scale provides three scores, one per subscale, where the minimum is "0" and the maximum is "21". High scores express more negative psychological state.

The Portuguese version of DASS-21 was developed and tested by Pais-Ribeiro, Honrado, and Leal (2004). They found good Cronbach's alpha values for depression, anxiety and stress ($\alpha=.85$, $.74$ and $.81$, respectively), similar to the internal reliability of the original version. The same study also showed that DASS-21 has good convergent and discriminant validity. Our study also showed good Cronbach's alpha values of $.88$, $.87$, and $.88$, respectively, for depression, anxiety and stress.

The variables included in the sociodemographic component of the questionnaire were: children and parents' age, children and parents' gender, and parent's education.

Questionnaires were distributed by researchers at schools and special education institutions that accepted to participate. The questionnaires were self-administered individually with the collaboration of specialized teachers and school psychologists, technicians with whom parents have a relationship of trust. Sometimes, due to the absence of one of the parents, it was agreed that the parent who was invited (at school) would take a copy of the questionnaire to be answered by the missing parent, with a commitment to return it to the school's technician. However, most of the questionnaires were answered at school by both parents.

Data analysis

Data were analysed using SPSS version 21.0. Besides univariate descriptive statistics, we used ANOVA and t-Student tests, with estimation of effect sizes, for studying bivariate associations. When finding significant differences with ANOVA, post-hoc comparison test was performed with Bonferroni test. Statistical significance was defined as $\alpha = .05$ for all tests. For effect size, the following cut-offs were applied (Cohen, 1988): small size effect when d ranging from $.20$ to $.49$;

moderate size effect for d between $.50$ and $.79$; large size effect for $d \geq .80$.

Ethical issues

This study was submitted to and approved by the Regional Directorate for Education and the Regional Directorate for Special Education.

All technicians who collaborated in the study (for data collection) were previously informed about the goals and procedures of the study. Participant's also signed an informed consent document, with detailed information about the goals, procedures and right to refuse and quite participation at any moment. Anonymity of participants was guaranteed.

Results

Overall, 871 parents (fathers and mothers) participated in the study: 403 parents (227 mothers and 176 fathers) having sons/daughters with one of the considered disabilities (intellectual deficit, multi-deficiency or autism) and 468 (242 mothers and 226 fathers) having sons/daughters without disabilities. The autism ($n = 83$) and multi-deficiency ($n = 32$) sample of parent-dyads corresponded to the existing population (participation rate = 100%). From the total of 797 sons/daughters with intellectual deficit, 100 parent-dyads were randomly selected (12,5% of the population). From this sample size (430 parents; 215 father-mother dyads), 403 parents participated (answer rate = 93,7%), 227 mothers and 176 fathers, aged between 21 and 81 years old ($M = 45$; $SD = 9$). Regarding the sample size per type of disability, 206 father-mother dyads had sons/daughters with intellectual disabilities (51,1% of the sample), 143 dyads (35,5%) had a son/daughter with autism, and 52 dyads (12,9%) had a son/daughter with multi-deficiency. Sons/daughters with disabilities were mostly males (62.3%), aged between 4 and 30 years (with 30.7% aged 7 to 12 years).

Regarding the sample of parents with sons/daughters without disability, this was composed of 468 parents: 242 mothers and 226 fathers, aged between 25 and 79 years ($M = 43.04$, $SD = 7.89$).

The levels of anxiety, depression and stress in parents with sons/daughters with disabilities are significantly higher than those of the comparative sample: $t_{(869)} = 5.65, p < .001, d = .38$ for anxiety, $t_{(869)} = 5.65, p < .001, d = .39$ for depression, and $t_{(869)} = 2.83, p < .001, d = .19$ for stress (Table 1). However, the type of disability

(intellectual deficit, multi-deficiency or autism) is not associated with parents' levels of depression ($F_{(2,398)} = 1.14, p = .32$) stress ($F_{(2,398)} = 65, p = .52$) or anxiety ($F_{(2,398)} = 2.68, p = .07$).

Table 1. DASS-21 results for parents with or without a child or adolescent having a disability (by relevant sociodemographic characteristics)

	Anxiety		Depression		Stress	
	M (DP)	$F_{(2,398)}$; p	M (DP)	$F_{(2,398)}$; p	M (DP)	$F_{(2,398)}$; p
Son/daughter's age^a						
<= 6 (n=88)	2.25 (3.42)	4.23 ; .01	2.58 (2.92)	5.33 ; .00	3.96 (3.40)	2.76 ; .06
7 – 18 (n=224)	3.13 (3.63)		3.63 (4.10)		4.91 (4.09)	
19 – 30 (n=118)	3.88 (4.56)		4.91 (4.09)		5.34 (4.68)	
Parents' age^a						
21 – 39 (n=272)	2.57 (3.09)	4.66 ; .01	3.03 (3.37)	3.07 ; .04	4.48 (3.46)	2.45 ; .08
40 - 49 (n=398)	2.92 (3.72)		3.54 (4.07)		4.57 (4.10)	
>= 50 (n=204)	4.06 (4.66)		4.36 (4.59)		5.55 (4.73)	
Parents' education^a						
<= 4 th (n=214)	4.57 (5.05)	15.09 ; .00	5.03 (4.90)	14.08 ; .00	5.91 (4.77)	7.16 ; .00
5 th – 9 th (n=224)	2.80 (3.31)		3.04 (3.30)		4.25 (3.71)	
10 th – 12 th (n=207)	1.61 (2.10)		2.28 (2.63)		3.76 (3.27)	
University (n=223)	0.92 (1.42)		1.68 (1.66)		3.76 (2.68)	
Parents' gender^a						
Fathers (n=402)	2.85 (3.79)	-1.30 ; .19 ^b	3.05 (3.61)	2.54 ; .01 ^b	4.40 (4.14)	1.79 ; .07 ^b
Mothers (n=469)	3.37 (3.97)		4.08 (4.34)		5.15 (4.13)	
Sons or daughters						
With disability (n=215)	3.14 (3.89)	5.65 ; .00 ^c	3.14 (3.89)	5.65 ; .00 ^c	4.82 (4.14)	2.83 ; .00 ^c
Without disability (n=215)	1.85 (2.83)		1.85 (2.83)		4.07 (3.61)	

^aOnly considering the sample of sons or daughters with disabilities

^b t_{401} ; ^c t_{869}

When considering only the sample of parents with sons/adolescents having a disability, significant differences were found for anxiety and depression according to the age of the son/daughter. Comparing the group "0-6 years" with the group "19-30 years", there were significant differences for both depression ($F_{(2,398)} = 5.33, p < .01, d = .53$) and anxiety ($F_{(2,398)} = 4.23, p < .05, d = .42$). The group of parents with sons/daughters between 19 and 30 years old showed higher values of depression ($M = 4.91, SD = 4.09$) and anxiety ($M = 3.88, SD = 4.56$), compared to parents with children less than 6 years (anxiety, $M = 2.25, SD = 3.42$; depression, $M = 2.58, SD = 2.92$) (Table 1). The effect size was moderate for depression and small for anxiety.

Only the stress scores were not different according to parents' age. Parents between 21 and 39 years old have significant different scores for depression ($F_{(2,398)} = 3.07, p < .05, d = .33$) and anxiety ($F_{(2,398)} = 4.66, p < .05, d = .37$) of parents aged 50 years or older. The group of parents aged 50 years or older have higher scores of depression ($M = 4.36, SD = 4.59$) and anxiety ($M = 4.06, SD = 4.66$) than parents aged 21 to 39, and than parents between 21 and 39 (depression: $M = 3.03, SD = 3.37$; anxiety: $M = 2.57, SD = 3.09$) (Table 1). In both cases the effect size was small.

Significant differences were found for all subscales of DASS-21 according to parents' education level. The multiple comparisons between the various groups considering the education level allow us to conclude

that all subscales tend to decrease as the level of education increases (Table 1): anxiety ($F_{(2,398)} = 15.09, p < .01$), depression ($F_{(2,398)} = 14.08, p < .01$) and stress ($F_{(2,398)} = 7.16, p < .01$). Less qualified parents (up to the 4th grade) have significantly higher anxiety, depression and stress values than parents with higher levels of education, and the effect size of the differences is progressively higher as the education level increases. Thus, among the group "up to the 4th grade", there were higher levels of anxiety ($M = 4.57, SD = 5.05$), depression ($M = 5.03, SD = 4.90$) and stress ($M = 5.91, SD = 4.77$) than for parents of the other education level groups. The effect sizes are small when comparing the group of "up to the 4th grade" with the group "5th – 9th grade" ($d = .42, d = .48$ and $d = .41$ for anxiety, depression, and stress, respectively). When comparing the same less education level (up to 4th grade) with parents with secondary education (10th to 12th grades), the size of the effect increases to moderate magnitude ($d = .74, d = .58$ and $d = .52$ for anxiety, depression, and stress, respectively). Finally, when comparing parents having less than the 5th grade with parents with university studies, the difference of scores of anxiety and depression is even greater (high effect sizes: $d = .92$ and $d = .94$, respectively). The effect size is moderate for stress ($d = .55$).

Comparing fathers with mothers of sons/daughters with disability, significant differences were found for depression ($t_{(399)} = 2.54, p < .05, d = .26$). Mothers revealed higher scores of depression ($M = 3.37, SD = 3.97$) than fathers ($M = 2.85, SD = 3.79$), with a small difference effect size.

Discussion

This study aimed to assess depression, stress and anxiety of parents with (and without) sons or daughters having intellectual deficit, multi-deficiency or autism, considering gender, age of both parents and sons/daughters, as well as education level of the parents.

In our study, parents of sons/daughters with disabilities presented higher values of depression, anxiety

and stress than parents with children without disabilities. These results are in line with what has been reported by Caruso (2017), Pereira and Kohlsdorf (2014), Shapiro et al. (1998), Hayes and Watson (2013), and Al-Farsi, Al-Farsi, Al-Sharbati, and Al-Adawi (2016). However, some studies do not corroborate these results or only partially. For example, Pereira-Silva and Dessen (2006), in a comparative study between fathers of children with Trisomy 21 and fathers of children with typical development, did not find significant parental stress differences. Also, Dyson (1997) found out that parents with or without children with disabilities do not differ significantly in terms of parental stress.

Our study shows that the type of disability (intellectual deficit, multi-deficiency or autism) is not associated with the levels of depression, stress or anxiety of parents. These results are not in line with Dale's findings (1996, as cited in Coutinho, 2004), concluding that the more severe the disability, the more the distress experienced by families. The same happened in the studies of Cherubini, Bosa, and Bandeira (2008) and of Holroyd and McArthur (1976, cited by Pereira, 1996), that revealed that parents of autistic children have higher levels of stress than parents of children with Trisomy 21. Olsson and Hwang (2001) also demonstrated that mothers of children with autism are at higher risk than mothers of children with intellectual disabilities without autism. In the same sense, Schmidt and Bosa (2007) also shown that the mothers of children and youth with autism are a group at high risk for the development of stress. On the other hand, the findings of Pereira-Silva and Dessen (2006) are in line with our results: they did not find significant differences in the functioning of families with children with Trisomy 21, comparing them with those with normal development in respect to parental stress.

The parent's and sons/daughters' sociodemographic characteristics deserved special attention in our study. We found out that anxiety and depression scores of older disabled sons/daughters' parents are higher than the corresponding scores for parents of younger sons/daughters with disability. On the other hand, no significant differences were found regarding the level of stress. These data are consistent with the study of

Chou et al. (2010) with a sample of 350 mothers of disabled adults. These researchers showed that 60-70% of older women, caregivers of adults with disabilities, are at high risk for symptoms of depression. In the same way, Martins and Couto (2014) concluded that the prevalence of depression and anxiety in older parents with adult children with disabilities is higher than in younger parents. However, Hsich et al. (2009) found that age of the children was negatively correlated with the impact on the family. They concluded that family members gradually adapt as their children grow up.

We also found that stress, anxiety and depression levels is associated with the age of the parents. Younger parents are much less susceptible to anxiety and depression than parents 50 years or older. These results are according with Dave et al. (2014) who showed that the levels of depression (prevalence of 63%) of parents of intellectual disabled children are highly associated with the age of these caregivers. The same conclusions are pointed out by Martins and Couto (2014). Pereira (1996) contradicts these studies by showing that younger parents with children with disabilities present higher levels of stress because they feel less prepared to cope with the situation.

Considering parent's education level, it was verified that anxiety, depression and stress decrease as the level of education increases, which is according to Alarcão and Gaspar (2007), who reported that low educational level is associated with disturbances in the family and individual development.

According to our data, the gender of the disabled son/daughter has no association with the anxiety, depression or stress of their parents. These results contradict Lamb and Bilings (1997, as cited in Pereira-Silva & Dessen, 2001), who found that parents have higher anxiety, depression and/or levels of stress when they have daughters with a disability than when they have sons with a disability.

Considering the sex of the parents who participated in our study, mothers included revealed higher scores of depression than fathers. Similar conclusion was reported by Pereira-Silva and Dessen (2006), who

mentioned that mothers are heavily overloaded with the care of children with disabilities, triggering feelings of anxiety, depression and stress. Similarly, Cherubini, Bosa and Bandeira (2008) concluded that fathers present less psychiatric symptoms than mothers. Bailey et al. (2007), as well as Olsson and Hwang (2001), also concluded that fathers indicate lower values of depression than mothers. It is relevant to mention here that we obtained greater collaboration of parents of sons/daughters without disabilities than from parents of sons/daughters with disabilities (also, more resistance from fathers than from mothers).

Future research should be extended to physical disabilities (sensorial and motor handicaps). It would also be interesting to study the marital functioning of families and their supportive networks, insofar as these may constitute moderating variables of parents' anxiety, depression or stress. Another suggestion relates to the possibility of evaluating the concerns of older parents of adults with intellectual disabilities with qualitative studies using individual interviews or focus groups. According to Poston et al. (2004), this would be a relevant approach also to evaluate the spirituality in lives of these families as a protective strategy.

Finally, recent literature (e.g. Burton, Zwahr-Castro, Magrane, Hernandez, Farley, & Amodei, 2018; Siller, Hotez, Swanson, Delavenne, & Sigman, 2018) has shown the importance of implementing parental psychological intervention programs that should include preventive coping strategies for anxiety, depression and for stress situations. The Nurturing Program for Parents and Their Children with Special Needs and Health Challenges (SNHC) is a 12-sessions program for parents of children with special needs that has been shown to be effective for promoting the empowerment of families (Burton et al., 2018). Also, home-visit programs have been widely recognized as having a high potential for parental coping development (Azzillessing, 2011). It would be important to validate programs like these ones and to create a parental support service for Portuguese families with children with disabilities. It is of paramount importance to develop families and disabled children's autonomy, assuring

active participation of parents and children with disabilities in their own life projects. Educating these parents and children for self-determination is imperative to diminish anxiety, depression and stress among these families.

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Declaration of Conflicting Interests

The authors declare no conflicts of interest with respect to the research, authorship, and/or publication of this article.

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