



Examining the Impact of Coping Strategies on the Quality of Life in Children with Various Disabilities

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ABSTRACT

Children with disabilities face unique challenges that affect their well-being and quality of life (QOL). This study explores the intersectionality of disability and coping strategies in Saudi Arabia, a context in which comprehensive research on this topic is scarce. Cultural barriers hinder research participation, and data on the prevalence of disabilities are limited. A cross-sectional design was used to capture the dynamic relationship between coping strategies and QOL. A stratified random sample of 369 children (aged 6-18 years) from diverse socioeconomic backgrounds was studied. QOL was measured using the short form-12 health survey to assess the physical and mental components. Coping strategies were assessed using the validated COPE inventory. A stepwise multiple regression analysis was performed to determine the association between QOL and coping strategies. The significance level was set at a *P* value of <0.05 throughout the analysis. The findings of this study revealed that participants with auditory problem have shown better QOL as compared to children with other disabilities. Participants with visual problems reported a greater use of emotional support, information support, positive reframing, acceptance, and religious coping. Children with autism were found to use only coping strategies. Participants with intellectual disabilities used behavioral and humorous coping strategies. Participants with auditory problems believed in active coping, denial, and substance abuse. Physical functioning, physical role, bodily pain, emotional role, and physical component summary were found to be significantly and negatively correlated with coping strategies, whereas general health, vitality, social functioning, and mental health were positively and significantly related to coping strategies. Stepwise multiple regression analysis revealed that emotional support, denial, behavioral disengagement, self-blame, religion, acceptance, humor, and substance abuse were significant predictors of QOL. Overall, the findings of this study emphasize the complexity of addressing the needs of disabled children and the importance of holistic and culturally sensitive approaches in rehabilitation and support programs.

KEYWORDS

quality of life, coping strategies, disabilities, Saudi Arabia

INTRODUCTION

Children with disabilities encounter distinct challenges that significantly affect their overall well-being and quality of life (QOL). The intersectionality of disability and coping strategies is crucial in understanding how these children navigate their daily lives. In the Kingdom of Saudi Arabia (KSA), disability has emerged as a critical social and economic medical issue. However, the absence of comprehensive studies in this area hampers the availability of data on the incidence, prevalence, and socio-demographic characteristics of impairment and disability (Kisioglu et al., 2003). Conducting research on disability-related issues in Saudi Arabia poses numerous difficulties, including cultural barriers where individuals may feel embarrassed about having a disabled relative, leading to reluctance in participating in research (Al-Gain and Al-Abdulwahab, 2002).

According to various definitions, an estimated 3.73% of the population in the KSA have functional disabilities that curtail their independence (Perriharris, 1998). Research on the prevalence and incidence of disability in KSA has predominantly focused on disabled children, and there is a research gap in this domain (Al-Turaiki, 2000; Al-Hazmy et al., 2004). A study in Qaseem reported a higher incidence of physical disability (1.7%) than mental retardation (1.4%) in children (Alsekait, 1993). A national survey of 60,630 children revealed that 6.33% reported having a disability, with the highest ratio in the Jazan region (9.9%) and the lowest in Riyadh (4.36%). The most common disabilities were physical disability (3%) and learning disability (1.8%) (Al-Hazmy et al., 2004). The history of special education services for disabilities in KSA dates back to 1958, with the

initiation of education for blind students in schools known as “scientific institutes.” In 1962, the Ministry of Education established the Department of Special Learning to develop services for students with blindness, deafness, and mental retardation. Subsequently, in 1964, institutes were established in Makah, Aneaza, and Al Hofuf for students with blindness (Alquraini, 2010).

Numerous studies have stressed the significance of coping strategies in alleviating the adverse effects of disability on psychosocial and emotional well-being (Compas et al., 2017; Dunn, 2019). Coping strategies play a pivotal role in helping individuals to manage stressors, enhance resilience, and adapt to their circumstances (Skinner et al., 2003). Different studies revealed that there are several coping strategies among individuals with disabilities for their psychological distress. These include seeking social support, problem solving, physical exercise, avoidance, using social media, watching movies, and relationship with others (Werner and Smith, 2001; Kim et al., 2020; Deasy et al., 2014). Social support and problem-focused coping strategies play an important role in increasing life satisfaction and the personal growth of people with disabilities (Kim and McKenzie, 2014). Spiritual coping was the most frequently used coping strategy among psychological distress in participants with physical disabilities (Desalegn et al., 2023).

However, the specific impact of coping strategies on the QOL of children with disabilities requires an in-depth investigation. Coping strategies are considered context-dependent and influenced by both the stressor and the environment in which they occur (Hastings et al., 2005). Additionally, habitual coping strategies vary among families (Hastings et al., 2005). Existing instruments designed to measure coping responses classify them into specific strategies, approaches, or styles, using different classification systems (Aldwin et al., 1980; Vitaliano et al., 1985; Folkman et al., 1986; Aldwin and Revenson, 1987; Carver, 1997).

Understanding the coping mechanisms employed by children with disabilities is crucial for developing targeted interventions and support systems that are tailored to their needs. This cross-sectional study aims to contribute to the current body of knowledge by conducting a comprehensive analysis of coping strategies and their direct correlation with the QOL in children with diverse disabilities. We sought to provide insights into the establishment of evidence-based interventions that promote resilience and improve the general well-being of children with a range of disabilities by carefully examining these variables and coping strategies.

MATERIALS AND METHODS

Study design

This study adopted a cross-sectional design to examine the impact of coping strategies on the QOL of children with various disabilities. Cross-sectional studies allow for the simultaneous collection of data on coping strategies and QOL, providing a snapshot of their relationships at a specific point in time (Kesmodel, 2018). The Deanship of Scientific

Research at King Faisal University in AlHasa, Saudi Arabia, granted ethical approval for this study (KFU-REC-2023-SEP-ETHICS1350). This study was conducted in compliance with the Declaration of Helsinki on research involving human subjects. All participants were informed of the purpose and goal of the study, and the survey was conducted after all requirements were met.

Participants

This study focused on children aged 6-18 years residing in Saudi Arabia. Using a stratified random sampling approach, the population was categorized based on the geographical region, urban and rural setting, and socioeconomic strata to ensure representation across diverse segments. The total sample size was 415 calculated using statistical methods, considering the prevalence of disability among juveniles, the confidence level, and the margin of error. However, only 369 respondents responded to this survey. We analyzed the prevalence of various types of disabilities and investigated their distribution across different urban and rural areas, age groups, and socioeconomic strata.

Data collection tools

To achieve this goal, this study used various measures including the Brief COPE Inventory to assess coping strategies. The Short-Form-12 Health Survey version 2 was used to measuring QOL. Both instruments are accessible in the Arabic version (R); hence, we utilized the Arabic version of the inventory to facilitate comprehension and ensure precise responses to the inquiries. Later, we translated the outcome into English version for the analysis. The study also included a demographic questionnaire prepared by the researchers.

Brief COPE

Coping strategies were evaluated using a brief coping inventory. Brief COPE is a 28-item scale designed to measure effective and ineffective coping strategies in response to stressful life events (Carver, 1997). Brief COPE consists of 14 subscales, including self-distraction, active coping, denial, substance abuse, emotional support, use of information support, behavioral disengagement, venting, positive reframing, planning, humor, acceptance, religion, and self-blame. A 4-point Likert scale, with 1 representing “not at all” and 4 representing “a great deal,” was used by the respondents to rate their use of coping mechanisms. The coping score for each subscale was calculated as the sum of the individual item scores. A high score on this scale indicates greater use of any specific coping strategy (Lode et al., 2007). Based on Cooper’s categorization model, coping strategies are divided into the following three categories: (i) problem-focused coping (active coping, using information support, and planning); (ii) emotional-focused coping (acceptance, humor, positive reframing, and emotional support); and (iii) dysfunctional coping (behavioral disengagement, denial, distraction,

self-blame, substance abuse, and venting) (Cooper et al., 2006). According to Meyer's model, coping can be divided into two categories, such as (i) adaptive coping (problem- and emotion-focused coping) and (ii) maladaptive coping (dysfunctional coping) (Meyer et al., 2001). As reported by Carver et al. (1989), the internal consistency reliability of the COPE inventory ranged from 0.42 to 0.89. In this study, the internal consistency reliability for this measure (Cronbach's alpha) ranged from 0.43 to 0.85 in the current sample.

Short form-12

QOL was assessed using Short Form-12 (SF-12). The SF-12 health survey is the SF-12v2, an abbreviated version of SF-36 (Sanderson and Andrews, 2002). The 12 items were shown to predict at least 90% of the physical and mental summary scales derived by Ware et al. (1995) from SF-36. This self-reported scale measures the following eight domains: physical functioning, role-physical, bodily pain, general health, vitality, social functioning, role-emotional, and mental health. In the present study, the physical component scale (PCS-12) and mental component scale (MCS-12) consisted of six items each and were computed and normalized for SF-12v2 according to published algorithms (Ware et al., 1996). The scores ranged from 0 to 100, with higher scores indicating better physical and mental health (Orji et al., 2020). A score of ≤ 50 on PCS-12 has been recommended as the cutoff to determine a physical condition, and a score of ≤ 42 on MCS-12 indicated clinical depression (Ware et al., 1995). The physical component summary and the mental component summary showed a good internal consistency and reliability, as evidenced by alpha coefficients of 0.89 and 0.76, respectively (Ware et al., 1994). The internal consistency reliability (Cronbach's alpha) of the measure used in the present study was found to be 0.80 and 0.76, respectively.

Demographic questionnaire

The instrument covered demographic information such as age, gender, type and duration of disability, and educational experiences. Furthermore, details regarding their families, such as living areas, family type, income, occupation, and housing status, were provided.

Procedure

Trained senior medical students and interviewers conducted face-to-face interviews with parents or guardians of the selected children, ensuring confidentiality and cultural sensitivity. A total of 15 minutes was taken to complete SF 12 and Brief COPE. We have followed randomly for assessing the outcomes based on these inventories. In addition, collaboration with healthcare facilities and educational institutions has facilitated access to medical records and academic data. Prior to data collection, informed consent was obtained from parents or guardians, emphasizing the voluntary nature

of participation. Strict measures were taken to protect the privacy of the participants, ensuring that the data were anonymized and securely stored.

Statistical analysis

Statistical Package for Social Sciences (SPSS) software (version 27.0; IBM, SPSS, Chicago, IL, USA) was used for statistical analysis. Descriptive statistics were used to characterize the study population. One-way analysis of variance was used to examine the differences in QOL scores, coping strategies, and type of disability. The role of coping strategies was examined using stepwise multiple regression analyses to predict QOL and P value was considered statistically significant at $P < 0.05$.

RESULTS

Socio-demographic and health-related characteristics of study participants

The participants in the present study were 369 children (226 males and 143 females) enrolled in different rehabilitation centers in the Eastern Governorate of Saudi Arabia. The age of the participants ranged from 6 to 18 years [mean (M) = 12.31; standard deviation (SD) = 3.69]. Approximately 156 (42.2%) participants were studying in elementary school. The majority (93%) of the study sample belonged to urban areas, and only 7% lived in rural areas. The percentage of participants living in their own houses and rented houses was 60.2% and 39.8%, respectively (Table 1). Of the 369 disabled children, 125 (33.9%) had autism spectrum, followed by learning disability (26.3%), auditory disability (19.8%), visual disability (9.5%), multiple disabilities (6%), and intellectual disability (4.6%). Most participants (40.4%) had a long disability duration. Approximately 7% of the participants had a 3- to 4-year duration of disability.

Table 2 presents the mean scores and SDs of different types of disabilities for the measures of QOL and coping strategies. For the measure of QOL, results revealed significant differences between mean scores of the participants for the measures of physical component summary ($P < 0.01$) and mental component summary ($P < 0.05$). Overall, mean QOL scores of the participants also differed significantly ($P < 0.01$). Mean scores clearly revealed that participants with auditory problem have shown better QOL in physical component summary ($M = 1.89$, $SD = 0.31$) and mental component summary ($M = 1.87$, $SD = 0.33$) as well as overall QOL ($M = 3.76$, $SD = 0.51$). The mean scores of these groups of participants for different dimensions of QOL are graphically presented in Figure 1.

Significant differences were also observed between the mean scores of the various types of disabilities for coping strategies, shown in Table 3. The F values revealed significant differences in active coping ($P < 0.01$), denial ($P < 0.01$), substance abuse ($P < 0.01$), emotional support ($P < 0.01$), use of information support ($P < 0.01$), behavioral

Table 1: General characteristics of the participants in the study ($n = 369$).

Factors	Number	Percentage
Gender		
Male	226	61.2
Female	143	38.8
Age		
6-12 years	200	54.2
13-18 years	169	45.8
Type of disability		
Visual problem	35	9.5
Learning disability	97	26.3
Autism spectrum disorder	125	33.9
Intellectual disability	17	4.6
Auditory problem	73	19.8
Multiple disability	22	6.0
Duration of disability		
1-2 years	39	10.6
3-4 years	25	6.8
5-6 years	40	10.8
7-8 years	53	14.4
9-10 years	63	17.1
>11 years	149	40.4
Education qualification		
Elementary	156	42.3
Middle	103	27.9
High	110	29.8
Family status		
Joint	171	46.3
Nuclear	198	53.7
Area of residence		
Urban	343	93.0
Rural	26	7.0
Monthly income		
<10,000 SAR	224	60.7
10,001-15,000 SAR	116	31.4
>15,000 SAR	29	7.9
Family occupation		
Government employees	191	51.8
Private employee	83	22.5
Business	87	23.6
Others	8	2.2
Housing status		
Own	222	60.2
Rented	147	39.8

disengagement ($P < 0.01$), positive reframing ($P < 0.01$), planning ($P < 0.01$), humor ($P < 0.01$), acceptance ($P < 0.01$), and religion ($P < 0.01$). Mean coping strategies scores clearly indicate that participants with visual problem reported greater use of emotional support ($M = 6.02$, $SD = 1.80$), use of information support ($M = 5.62$, $SD = 1.75$), positive reframing ($M = 5.06$, $SD = 1.71$), acceptance ($M = 6.08$, $SD = 1.71$), and religion coping ($M = 6.14$, $SD = 2.11$). Participants with autism ($M = 5.09$, $SD = 2.09$) were found to use planning coping strategies in comparison to children with other disabilities. Participants with intellectual disabilities used behavioral disengagement ($M = 4.52$, $SD = 1.62$) and humor ($M = 4.23$, $SD = 1.78$) coping strategies. Participants with intellectual disabilities used behavioral

disengagement ($M = 4.52$, $SD = 1.62$) and humor ($M = 4.23$, $SD = 1.78$) coping strategies. The participants with auditory problems believed in active coping ($M = 5.30$, $SD = 2.04$), denial ($M = 4.16$, $SD = 2.08$), and substance abuse ($M = 3.36$, $SD = 2.20$). However, no significant differences between the coping strategies of participants with different disabilities were found for self-distraction, venting, or self-blame. These mean scores are graphically displayed in Figure 2.

Pearson's correlation coefficient was used to examine the relationship between the coping strategy scores and QOL. The results presented in Table 3 indicate that physical functioning, role-physical, role-emotional, and physical component summary were significantly and negatively correlated with all subscales of coping strategies except religion coping. This shows that participants experiencing better physical functioning, role-physical, role-emotional, and physical component summary reported less use of coping strategies. Similarly, bodily pain was significantly and negatively related to self-distraction ($P < 0.05$), denial ($P < 0.01$), substance abuse ($P < 0.01$), emotional support ($P < 0.01$), use of information support ($P < 0.05$), behavioral disengagement ($P < 0.01$), venting ($P < 0.01$), humor ($P < 0.05$), and self-blame ($P < 0.01$). This means that respondents who experienced bodily pain reported less frequent use of these coping strategies.

However, general health was positively and significantly correlated with acceptance coping ($P < 0.05$). This means that respondents who experienced better general health reported greater use of acceptance coping strategies. Mental health was positively and significantly related to all dimensions of coping strategy except self-blame. Vitality was positively and significantly related to emotional support ($P < 0.05$), use of information support ($P < 0.05$) and religion ($P < 0.01$). This indicates that children reported more vitality by increasing emotional support, use of information support, and religious coping. Social functioning was positively and significantly related to self-distraction ($P < 0.01$), denial ($P < 0.01$), substance abuse ($P < 0.05$), emotional support ($P < 0.01$), use of information support ($P < 0.05$), behavioral disengagement ($P < 0.01$), venting ($P < 0.01$), humor ($P < 0.01$), and self-blame ($P < 0.01$). This means that participants experiencing better social functioning reported more use of coping strategies. Mental health was positively and significantly related to self-distraction ($P < 0.01$), active coping ($P < 0.01$), denial ($P < 0.05$), substance abuse ($P < 0.01$), emotional support ($P < 0.01$), the use of information support ($P < 0.01$), behavioral disengagement ($P < 0.01$), venting ($P < 0.01$), positive reframing ($P < 0.01$), planning ($P < 0.01$), humor ($P < 0.01$), acceptance ($P < 0.01$), and religion ($P < 0.01$). This shows that participants with better mental health reported greater use of coping strategies.

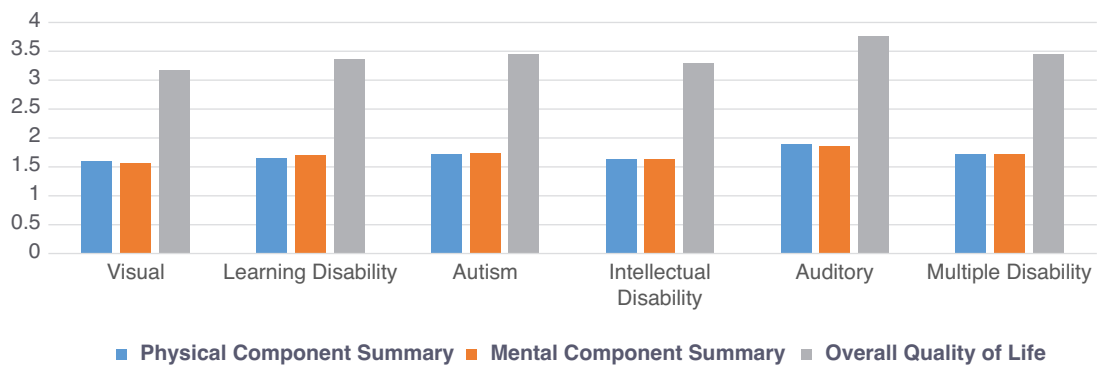
To examine the role of coping strategies in predicting the QOL of disabled children, stepwise multiple regression analysis was performed. In this study, separate analyses were conducted for each QOL dimension of QOL. The results presented in (Table 4) clearly indicate that, while predicting role functioning from all 14 coping strategies, emotional support proved a significant predictor of role functioning ($\beta = -0.23$, $t = -4.48$, $P < 0.01$), which accounted for 5% of the variance in the scores on the dependent variable [$R^2 = 0.05$,

Table 2: QOL and coping strategies of disabled people (M and SD) according to the type of disability ($n = 369$).

	Type of disability					
	Visual M \pm SD	Learning disability M \pm SD	Autism M \pm SD	Intellectual disability M \pm SD	Auditory M \pm SD	Multiple disabilities M \pm SD
QOL						
Physical component summary	1.60 \pm 0.49	1.65 \pm 0.47	1.72 \pm 0.44	1.64 \pm 0.49	1.89 \pm 0.31**	1.72 \pm 0.45
Mental component summary	1.57 \pm 0.50	1.71 \pm 0.45	1.73 \pm 0.44	1.64 \pm 0.49	1.87 \pm 0.33*	1.72 \pm 0.45
Overall QOL	3.17 \pm 0.85	3.37 \pm 0.77	3.46 \pm 0.72	3.29 \pm 0.68	3.76 \pm 0.51**	3.45 \pm 0.60
Coping strategies						
Self-distraction	4.02 \pm 1.46	4.37 \pm 1.66	4.52 \pm 1.84	4.47 \pm 1.94	4.45 \pm 2.06	3.36 \pm 1.49
Active coping	4.54 \pm 1.61	4.57 \pm 1.94	4.99 \pm 1.70	4.29 \pm 1.75	5.30 \pm 2.04**	3.36 \pm 1.46
Denial	3.25 \pm 1.55	3.64 \pm 1.74	4.04 \pm 1.92	3.58 \pm 1.66	4.16 \pm 2.08**	2.90 \pm 1.15
Substance abuse	2.11 \pm 0.40	3.23 \pm 1.87	2.80 \pm 1.40	2.82 \pm 1.42	3.36 \pm 2.20**	2.13 \pm 0.63
Emotional support	6.02 \pm 1.80**	4.38 \pm 1.82	4.99 \pm 2.06	5.47 \pm 1.58	4.82 \pm 2.02	3.72 \pm 2.00
Use of information support	5.62 \pm 1.75**	4.46 \pm 1.80	5.24 \pm 2.00	5.70 \pm 1.79	5.31 \pm 1.92	4.00 \pm 1.71
Behavioral disengagement	3.57 \pm 1.26	3.80 \pm 1.79	3.80 \pm 1.70	4.52 \pm 1.62**	4.15 \pm 1.80	2.50 \pm 0.96
Venting	4.48 \pm 1.54	4.35 \pm 1.84	4.47 \pm 1.80	4.58 \pm 1.76	4.64 \pm 1.91	3.54 \pm 1.87
Positive reframing	5.06 \pm 1.71**	4.65 \pm 2.06	4.84 \pm 1.99	3.76 \pm 2.16	4.60 \pm 1.94	2.95 \pm 1.49
Planning	4.91 \pm 1.90	4.77 \pm 2.04	5.09 \pm 2.09**	3.70 \pm 1.79	5.01 \pm 1.94	3.27 \pm 1.63
Humor	3.40 \pm 1.31	3.73 \pm 1.73	3.68 \pm 1.73	4.23 \pm 1.78**	3.89 \pm 1.85	2.09 \pm 0.42
Acceptance	6.08 \pm 1.78**	4.81 \pm 1.96	5.38 \pm 1.96	5.47 \pm 1.97	5.43 \pm 2.08	3.36 \pm 1.39
Religion	6.14 \pm 2.11**	5.77 \pm 2.01	5.25 \pm 2.29	4.64 \pm 2.34	5.89 \pm 2.04	3.81 \pm 2.32
Self-blame	3.74 \pm 1.46	3.76 \pm 1.68	4.08 \pm 1.96	3.41 \pm 1.80	4.31 \pm 1.07	3.31 \pm 1.83

Abbreviations: M, mean; QOL, quality of life; SD, standard deviation.

* $P < 0.05$; ** $P < 0.01$.

**Figure 1:** Quality of life of the participants.

$F(1, 368) = 20.06, P < 0.01$]. In step 2, when denial coping was entered into the equation, it significantly predicted changes in role functioning scores ($\beta = -0.15, t = -2.85, P < 0.01$), explaining 2% of the variance in the dependent measure. Both variables jointly explained 7% of the variance in role functioning, which was significant [$R^2 = 0.07, F(1, 368) = 8.12, P < 0.01$]. The results revealed that emotional support and denial coping were negatively related to role functioning, which means that, with increasing emotional support and denial coping, role functioning decreased significantly.

While predicting role-physical from scores on various coping strategies, a similar trend was found. In step 1, emotional support was found to be a significant predictor of role-physical ($\beta = -0.19, t = -3.76, P < 0.01$), which accounted for

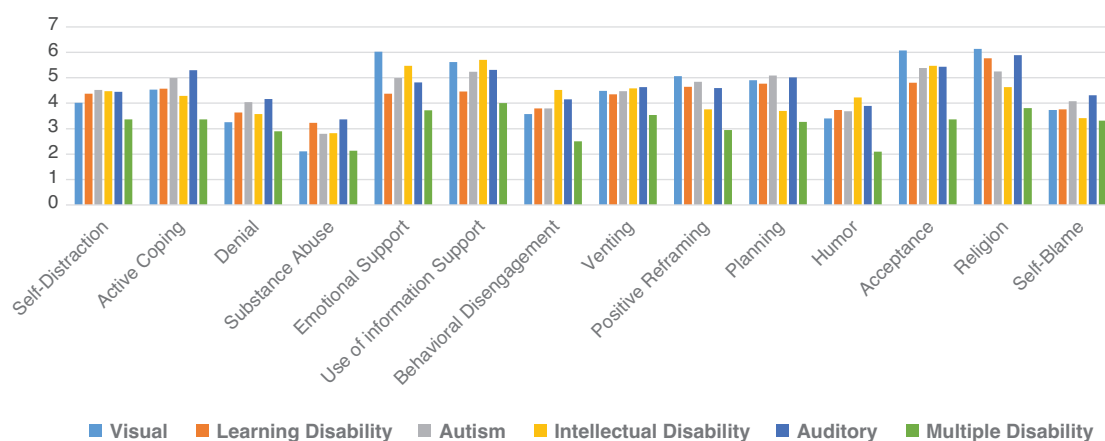
4% of the variance in the scores on role-physical [$R^2 = 0.04, F(1, 368) = 14.19, P < 0.01$]. When denial coping was entered into the equation in step 2, it significantly predicted changes in the scores on role-physical ($\beta = -0.11, t = -2.11, P < 0.01$), explaining 1% variance in the criterion variable. Both variables jointly explained 5% of the variance in the score on role-physical which was significant [$R^2 = 0.05, F(1, 368) = 9.39, P < 0.01$]. The negative relationship between emotional support and denial coping with physical role indicates that, with increasing use of emotional support and denial coping, physical role reduced significantly.

Behavioral disengagement coping was a significant predictor of pain ($\beta = -0.22, t = -4.24, P < 0.01$), which explained 5% of the variance in the criterion variable

Table 3: Coefficient of correlation of scores on different dimensions of QOL with coping strategies.

Coping strategies	QOL									
	PF	RF	BP	GH	VT	SF	RE	MH	PCS	MCS
Self-distraction	-0.18**	-0.16**	-0.11*	0.05	0.03	0.17**	-0.17**	0.15**	-0.18**	-0.03
Active coping	-0.14**	-0.11*	-0.04	0.07	0.10	0.07	-0.18**	0.15**	-0.12*	-0.05
Denial	-0.20**	-0.15**	-0.17**	-0.06	0.04	0.23**	-0.23**	0.12*	-0.22**	0.07
Substance abuse	-0.17**	-0.11*	-0.17**	-0.03	0.04	0.13*	-0.16**	0.16**	-0.18**	-0.02
Emotional support	-0.23**	-0.19**	-0.19**	-0.05	0.12*	0.17**	-0.17**	0.20**	-0.25**	-0.02
Use of information support	-0.20**	-0.12*	-0.13*	0.01	0.13*	0.12*	-0.10*	0.17**	-0.18**	-0.07
Behavioral disengagement	-0.18**	-0.14**	-0.22**	-0.02	0.07	0.17**	-0.23**	0.15**	-0.21**	-0.06
Venting	-0.19**	-0.18**	-0.20**	-0.01	0.06	0.15**	-0.23**	0.20**	-0.23**	-0.05
Positive reframing	-0.19**	-0.13*	0.02	0.03	0.07	0.06	-0.22**	0.15**	-0.16**	-0.08
Planning	-0.18**	-0.11*	-0.06	0.08	0.08	0.00	-0.13*	0.15**	-0.14**	-0.02
Humor	-0.22**	-0.16**	-0.13*	-0.01	0.09	0.18**	-0.24**	0.20**	-0.22**	-0.04
Acceptance	-0.18**	-0.11*	-0.09	0.13*	0.06	0.04	-0.13*	0.15**	-0.15**	-0.02
Religion	0.02	0.02	0.04	0.04	0.14**	0.09	-0.09	0.24**	0.01	-0.04
Self-blame	-0.18**	-0.15**	-0.18**	-0.02	-0.03	0.15**	-0.19**	0.10	-0.20**	-0.08

Abbreviations: BP, bodily pain; GH, general health; MCS, mental component summary; MH, mental health; PCS, physical component summary; PF, physical functioning; QOL, quality of life; RE, role-emotional; RP, role-physical; SF, social functioning; VT, energy/vitality. * $P < 0.05$; ** $P < 0.01$.

**Figure 2:** Coping strategies applied by the participants.

[$R^2 = 0.05$, $F(1, 368) = 17.97$, $P < 0.01$]. Emotional support coping entered the equation in step 2, which significantly predicted changes in the scores on pain ($\beta = -0.12$, $t = -2.09$, $P < 0.05$). Thus, this variable explained 1% of the variance in the criterion variable and the two variables jointly explained 6% of the variance in the scores on the dependent measure, which was statistically significant [$R^2 = 0.06$, $F(1, 368) = 11.26$, $P < 0.01$]. In step 3, positive reframing coping significantly predicted changes in the scores on pain ($\beta = 0.17$, $t = 2.80$, $P < 0.05$), explaining 2% of the variance in the dependent measure, which jointly explained 8% of the variance in pain scores [$R^2 = 0.08$, $F(1, 368) = 10.26$, $P < 0.01$]. In step 4, when self-blame coping was entered into the equation, it significantly predicted the change in the score on the criterion variable ($\beta = -0.15$, $t = -2.45$, $P < 0.05$). Although this variable accounted for only 1% of the variance in the scores on the criterion variable, both variables jointly explained 9% of the variance in the pain scores [$R^2 = 0.09$, $F(1, 368) = 9.31$, $P < 0.01$]. In step 5, humor coping was entered into the equation that predicted changes in the scores on pain ($\beta = 0.19$, $t = 2.13$, $P < 0.05$),

again explaining 1% of the variance in the dependent measure. These variables jointly and significantly explained 10% of the variance in the scores for the criterion variable [$R^2 = 0.10$, $F(1, 368) = 8.44$, $P < 0.01$]. These results revealed that behavioral disengagement, emotional support, and self-blame coping were negatively related to bodily pain, whereas reframing and humor coping were positively related with bodily pain. This indicates that with increasing use of behavioral disengagement, emotional support, and self-blame coping, bodily pain decreased significantly, while greater use of positive reframing and humor coping, bodily pain aspect of QOL increased significantly.

Religious coping emerged as a significant predictor of general health ($\beta = 0.13$, $t = 2.55$, $P < 0.01$), explaining 2% of the variance in general health [$R^2 = 0.02$, $F(1, 368) = 6.53$, $P < 0.01$]. In step 2, when acceptance coping was entered into the equation, a change in vitality scores was significantly predicted, and a variance of 1% was explained in the dependent measure ($\beta = -0.14$, $t = -2.15$, $P < 0.05$). These two variables jointly explained 3% of the variance in general health [$R^2 = 0.03$, $F(1, 368) = 5.62$, $P < 0.01$]. The results revealed

that religious coping was positively related to general health, which means that with increasing religious coping, general health increases significantly, whereas acceptance coping is negatively related to general health, indicating that increasing the use of acceptance decreases general health significantly.

When predicting vitality from all 14 coping strategies, only religion coping ($\beta = 0.14$, $t = 2.65$, $P < 0.01$) was found to be a significant predictor of vitality which explained 2% variance in the dependent measure [$R^2 = 0.02$, $F(1, 368) = 7.07$, $P < 0.01$]. This shows that children with disabilities who used religious coping reported higher vitality. While predicting social health from the scores on various coping strategies, in step 1, denial coping was found to be a significant predictor of social health ($\beta = 0.23$, $t = 4.50$, $P < 0.01$),

which accounted for 5% of the variance in the scores on the criterion variable [$R^2 = 0.05$, $F(1, 368) = 20.27$, $P < 0.01$]. In step 2, when religious coping was entered into the equation, it significantly predicted changes in the scores on social health ($\beta = -0.18$, $t = -3.44$, $P < 0.01$), explaining 3% variance in the dependent measure. Both variables jointly explained 8% of the variance in the social health score, which was significant [$R^2 = 0.08$, $F(1, 368) = 14.95$, $P < 0.01$]. In step 3, the variable of emotional support coping was entered into the equation that significantly predicted a change in the scores on social health ($\beta = 0.17$, $t = 3.35$, $P < 0.01$), which could again explain 3% of the variance in the criterion variable. These three variables jointly explained 11% of the variance in the score on the dependent measure [$R^2 = 0.11$,

Table 4: Result of stepwise multiple regression to predict QOL from coping strategies.

Criterion variables	Predictors	R ²	F(1, 368)	b	SE-b	β	T	95% CI
Role functioning	ES	0.05	20.06**	-3.95	0.88	-0.23	-4.48**	5.89 to -2.22
	ES	0.07	8.12**	-3.29	0.91	-0.19	-3.64**	-5.07 to 1.51
	DN			-2.79	0.98	-0.15	-2.85**	-4.71 to 0.87
Role-physical	ES	0.04	14.19**	-3.89	1.03	-0.19	-3.76**	-5.96 to -1.86
	ES	0.05	9.39**	-3.32	1.06	-0.16	-3.11**	-5.41 to -1.22
	DN			-2.43	1.15	-0.11	-2.11**	-4.69 to -0.16
Bodily pain	BD	0.05	17.97**	-3.75	0.87	-0.22	-4.24**	-5.49 to -2.01
	BD	0.06	11.26**	-2.88	0.98	-0.17	-2.94**	-4.79 to -0.95
	ES			-1.74	0.83	-0.12	2.09*	-3.38 to -0.11
	BD	0.08	10.26**	-3.90	1.03	-0.23	-3.77**	-5.94 to -1.87
	ES			-2.61	0.88	-0.18	-2.97**	-4.34 to -0.88
	PR			2.56	0.91	0.17	2.80**	0.76 to 4.35
	BD	0.09	9.31**	-2.92	1.10	-0.17	-2.65**	-5.09 to -0.75
	ES			-2.67	0.88	-0.18	-3.07**	-4.40 to -0.96
	PR			3.34	0.96	0.23	3.47**	1.44 to 5.22
	SB			-2.43	0.99	-0.15	-2.45*	-4.38 to -0.48
	DB	0.10	8.44**	-5.22	1.53	-0.30	-3.40**	-8.25 to -2.19
	ES			-2.78	0.87	-0.19	-3.19**	-4.49 to -1.06
	PR			3.11	0.96	0.21	3.24**	1.23 to 5.01
	SB			-2.87	1.00	-0.18	-2.85**	-4.86 to -0.89
General health	HU			3.32	1.55	0.19	2.13*	0.26 to 6.39
	RL	0.02	6.53**	1.72	0.67	0.13	2.55**	0.40 to 3.04
	RL	0.03	5.62**	2.80	0.83	0.21	3.34**	1.15 to 4.47
Vitality	AC			-1.98	0.92	-0.14	-2.15*	-3.79 to -0.17
	RL	0.02	7.07**	1.85	0.70	0.14	2.65**	0.48 to 3.22
Social health	DN	0.05	20.27**	3.35	0.77	0.23	4.50**	1.88 to 4.81
	DN	0.08	16.35**	4.19	0.77	0.29	5.42**	2.67 to 5.71
	RL			-2.23	0.64	-0.18	-3.44**	-3.49 to -0.95
	DN	0.11	14.95**	3.74	0.77	0.25	4.82**	2.21 to 5.26
	RL			-2.76	0.66	-0.22	-4.20**	-4.06 to -1.47
	ES			2.39	0.71	0.17	3.35**	0.98 to 3.79
	HU	0.06	21.79**	-5.68	1.21	-0.24	-4.67**	-8.08 to -3.29
Role emotion	HU	0.08	14.84**	-3.94	1.36	-0.16	-2.89**	-6.63 to -1.26
	DN			-3.46	1.27	-0.16	-2.74**	-5.96 to -0.98
	RL	0.06	22.86**	2.18	0.46	0.24	4.78**	1.28 to 3.07
Mental health	RL	0.08	15.30**	1.78	0.47	0.20	3.76**	0.85 to 2.71
	ES			1.42	0.52	0.14	2.71**	0.39 to 2.45
	RL	0.09	12.12**	1.71	0.47	0.19	3.62**	0.78 to 2.64
	ES			1.26	0.52	0.13	2.40*	0.23 to 2.29
	SA			1.39	0.60	0.12	2.32*	0.21 to 2.57

Abbreviations: AC, acceptance; BD, behavioral disengage; CI, confidence interval; DN, denial; ES, emotional support; HU, humor; PR, positive reframing; QOL, quality of life; RL, religion; SA, substance abuse; SB, self-blame.

* $P < 0.05$; ** $P < 0.01$.

$F(1, 368) = 14.95, P < 0.01$. The results revealed that coping with denial and emotional support was positively related to social health, which means that coping with social health increased significantly with increasing denial and emotional support, whereas religious coping was negatively related to social health, indicating a significant decrease in the use of religious coping with social health.

Humor was found to be a significant predictor of role emotion ($\beta = -0.24, t = -4.67, P < 0.01$), which accounted for 6% of the variance in the criterion variable [$R^2 = 0.06, F(1, 368) = 21.79, P < 0.01$]. When the variable denial was entered into the equation in step 2, it significantly predicted the change in the scores on role emotion ($\beta = -0.16, t = -2.74, P < 0.01$), explaining 2% of the variance in the dependent variable. These two variables jointly explained 8% of the variance in role emotion scores, which was significant [$R^2 = 0.08, F(1, 368) = 14.84, P < 0.01$]. The results revealed that humor and denial coping were negatively related to role emotion.

Finally, predicting the mental health of participants using different coping strategies revealed that, in step 1, religious coping was a significant predictor of mental health ($\beta = 0.24, t = 4.78, P < 0.01$), explaining 6% of the variance in the criterion variable [$R^2 = 0.06, F(1, 368) = 22.86, P < 0.01$]. In step 2, when emotional support was entered into the equation, it predicted a change in mental health scores ($\beta = 0.14, t = 2.71, P < 0.01$). Although this variable explained 2% of the variance in the dependent measure, these two variables jointly explained 8% of the variance in the mental health scores, which was significant [$R^2 = 0.08, F(1, 368) = 15.30, P < 0.01$]. In step 3, the variable of substance abuse coping was entered into the equation, which significantly predicted changes in mental health scores ($\beta = 0.12, t = 2.32, P < 0.01$). However, this could explain only 1% of the variance in the criterion variable. These three variables jointly explained 9% of the variance in the score on the dependent measure [$R^2 = 0.09, F(1, 368) = 12.12, P < 0.01$]. This shows that, with the increasing use of religion, emotional support and substance abuse coping improved the mental health of participants.

DISCUSSION

This study investigated the role of coping strategies adopted by children with disabilities in their QOL. To the best of our knowledge, this is the first study in Saudi Arabia to explore the relationship between coping strategies and QOL among children with diverse disabilities. The findings revealed that children with auditory problems had better QOL than those with other disabilities. These results are consistent with previous findings (Van der Straaten et al., 2020), which suggested that the QOL of children with hearing loss is similar to that of children with normal hearing. In contrast, a meta-analysis showed that hearing loss is associated with a poor QOL for social interaction and school activities (Moeller et al., 2007; Stevenson et al., 2015). The better QOL in children with auditory problems compared to other disabilities can vary based on various factors, such as hearing

devices (Yoshinaga-Itano, 2003; Moeller et al., 2007; Geers et al., 2013) and better language skills (Korver et al., 2010; Nittrouer et al., 2013; McCreery et al., 2015).

This study explored the coping strategies used by children with disabilities. Eleven coping strategies (active coping, denial, substance abuse, emotional support, use of information support, behavioral disengagement, positive reframing, planning, humor, acceptance, and religion) have been identified as important in dealing with psychological distress caused by disability. Previous studies have revealed that seeking social support, problem solving, physical exercise, avoidance, using social media, watching movies, and relationships with others are frequently used coping strategies among individuals with disabilities for their psychological distress (Werner and Smith, 2001; Deasy et al., 2014; Kim et al., 2020). There was a significant difference in the mean coping strategy scores among children with different types of disabilities. Participants with visual impairments reported a greater use of emotional support, information support, positive reframing, acceptance, and religious coping. Our results were consistent with the studies conducted previously, which reported that family support, social environment, and children's ability to adapt, can have a positive influence on children with visual impairments (Veerman et al., 2019). In our study, participants with autism were found to use planning coping strategies. Presently, there are no similar studies for comparison; however, Wang et al. (2011) reported that parents of children with autism tend to use planning more as a coping strategy than did the parents of children with mental retardation. Behavioral disengagement and humor coping were used by participants with intellectual disability. Although there is no study to which we can directly compare our findings, these findings are not compatible with other research that revealed that the majority of caregivers of people with intellectual disabilities used religious coping strategies (El Tahir et al., 2023). Participants with auditory problems believed in active coping, denial, and substance abuse. These results were partially supported by previous studies that reported people with hearing problems believed that active coping, turning to religion, and seeking social support were the most frequently used coping strategies among people with hearing problem (Hricová, 2018).

Remarkable findings were obtained in this study. QOL of children with disabilities was significantly related to coping strategy subscales. Our results were consistent with the findings of previous studies (Grey et al., 2011; Khanna et al., 2013; Carona et al., 2014; Hamama-Raz and Hamama, 2015; Motaharian et al., 2015), which reported that the overall QOL was associated with coping strategies. Our results demonstrated that physical functioning, role-physical, role-emotional, and the physical component summary of the SF-12 were significantly and negatively associated with all coping strategies, except religious coping strategies. These results are partially supported by other studies that have found that coping styles such as denial, humor, religion, and self-blame are negatively correlated with QOL (Aiyegbusi et al., 2018; Desalegn et al., 2023)

Interestingly, mental health was positively and significantly related to all coping strategies, except for self-blame. Vitality was also positively and significantly associated with

emotional support, the use of information support, and religion. Similarly, social functioning was positively and significantly related to coping strategies, except for active coping, positive reframing, planning, acceptance, and religious coping. Moreover, general health was found to be positively and significantly correlated with acceptance of coping only. This finding is in accordance with other studies that reported that the QOL of physically disabled people was positively associated with coping styles such as support and venting, positive reframing and acceptance, active coping, and self-distraction (Aiyegbusi et al., 2018). Previous studies have revealed that the use of adapted coping strategies is associated with QOL, while maladaptive coping strategies are associated with a lower QOL (Roubinov et al., 2015; Wilski et al., 2019; Altunan et al., 2021; Bassi et al., 2021; Contentti et al., 2021).

Stepwise multiple regression analysis revealed that emotional support, denial, behavioral disengagement, positive reframing, self-blame, humor, religion, acceptance, and substance abuse were significant predictors of different measures of QOL. Our results demonstrate that children with disabilities use both adaptive (emotional support, positive reframing, humor, religion, and acceptance) and maladaptive (denial, behavioral disengagement, self-blame, and substance abuse) coping strategies. The results revealed a negative and significant correlation between adaptive and maladaptive coping strategies and different dimensions of QOL, which can be explained by a theoretical perspective that emphasizes the role of coping mechanisms in buffering the impact of stress on QOL. Adaptive coping strategies, such as emotional support, problem solving, positive reframing, and acceptance, have been theorized to facilitate effective stress management and QOL. People who actively engage in adaptive coping are more likely to experience a sense of control, optimism, and self-efficacy that can enhance their QOL. This theoretical framework is in accordance with previous studies (Leslie-Miller et al., 2021; Smida et al., 2021). Maladaptive coping is characterized by avoidance, denial, and self-distraction, which are theorized to prevent individuals from effectively coping with stressors, leading to heightened emotional stress. Theoretical frameworks propose that these maladaptive coping mechanisms can perpetuate negative emotional states and contribute to the development of the symptoms of depression, anxiety, and stress (Almeida et al., 2021; Mishra et al., 2021; Salazar et al., 2021). Our finding add to the current literature by highlighting the importance of adaptive coping to enhance the QOL of children with various disabilities.

The positive association between specific adaptive coping (emotional support, religion, humor, and positive reframing) and different dimensions of QOL can be explained using a theoretical framework that emphasizes the role of these coping strategies in enhancing the QOL of people with disabilities. Emotional support is an intentional, verbal, and nonverbal way of showing care and affection for others. Providing emotional support to another person, such as reassurance, acceptance, encouragement, and caring, makes them feel valued and important (Burlison, 2003). Religion coping refers to the use of religious beliefs or practices to cope with stressful life situation. Religious beliefs and practices can help people cope with difficult situations such as physical illnesses

(Koenig et al., 2001; Pargament et al., 2005). Humor, as an adaptive coping strategy, can provide emotional relief, enhance social connections, and foster resilience in the face of adversity. Humor is also effective in increasing psychological well-being and reducing psychological symptom (Malik, 2021). Positive reframing involves focusing on ways in which a stressor may actually be positive or beneficial. Positive reframing has been shown to positively affect many aspects of life, improving metrics both psychologically and physiologically, following negative stressors (Tugade et al., 2004). By examining the individual contributions of each coping strategy, this study provides an in-depth understanding of the specific coping strategies that can improve the QOL of children with disabilities. The theoretical foundation and empirical evidence discussed shed light on the mechanism underlying the observed association, as well as the role of coping strategies and QOL in the context of children's disability, emphasizing the importance of addressing maladaptive coping strategies and promoting adaptive coping strategies to enhance QOL among disabled children.

While this research demonstrates a comprehensive approach to assessing disability and QOL among children and teenagers in the Eastern Governorate of Saudi Arabia, several limitations can be discussed here. The cross-sectional design of this study limits its ability to establish causal relationships between coping strategies and QOL outcomes. The study's reliance on children from rehabilitation centers might introduce bias toward those seeking or receiving rehabilitation services. This may not represent the entire population of children with disabilities, particularly those who do not have access to these services. The findings of this study may not be generalizable to the specific context of the Eastern Governorate of Saudi Arabia. Cultural, social, and economic factors unique to this region may have influenced the results, limiting their applicability to other populations. The use of self-reported measures, such as SF-12, relies on participants' subjective perceptions of their QOL, and may be susceptible to response biases or inaccuracies, particularly among children or parents/guardians reporting on behalf of children. Longitudinal studies would provide a more robust understanding of temporal dynamics and potential causal pathways.

Despite these limitations, this study suggests several implications for interventions aimed at helping children with disabilities. This study highlights the importance of integrating culturally relevant coping mechanisms, such as religious coping, into interventions for disabled children in Saudi Arabia to enhance their well-being. This emphasizes the need for policies tailored to address the diverse needs of disabled children. Understanding the prevalence and distribution of disabilities can inform efforts to improve access to healthcare, education, and rehabilitation services with a focus on reducing barriers for children from rural areas. Future research should adopt longitudinal designs to explore the evolution of coping strategies and their long-term impact. Healthcare professionals and educators should receive cultural sensitivity training to better address cultural factors that influence coping strategies. Engaging families, communities, and religious institutions is essential, and future research should explore the role of community-based

interventions and peer support networks in promoting coping strategies and enhancing the QOL of disabled children.

CONCLUSION

This study explored the connection between coping strategies and well-being of disabled children. The findings revealed diverse coping methods among participants with different disabilities, offering insights into their QOL. Surprisingly, children facing auditory challenges exhibited a higher overall QOL, whereas those with visual impairments tended to rely on emotional support and religious coping. Autism was associated with planning coping strategies, whereas intellectual disability was correlated with behavioral disengagement and humorous coping. Notably, coping strategies display intricate relationships with various aspects of well-being, with emotional support, denial, and humor emerging as the key predictors. These findings emphasize the need for tailored support systems and coping interventions to enhance the well-being of children with disabilities in Saudi Arabia. Further longitudinal research in this area is warranted to deepen our understanding of coping mechanisms and their impact on children's compromised well-being.

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AUTHOR CONTRIBUTIONS

All authors contributed significantly to the work that was published, regardless of whether it was in the areas of conception, study design, execution, data acquisition, analysis, or interpretation.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest in this work.

DATA AVAILABILITY STATEMENT

The data that support our findings can be obtained by directly asking the corresponding author.

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