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Quality of life in caregivers of children and adolescents with intellectual disabilities: Use of WHOQOL-BREF survey

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ABSTRACT

The present study based on World Health Organization quality of life (WHOQOL-BREF) scale to examine quality of life of the caregivers caring for their children/adolescents with intellectual disabilities in Taiwan, and the factors contributing to their quality of life. Structured interviews were conducted with 597 caregivers of children/adolescents with intellectual disabilities. The results found that the mean scores in each domain of WHOQOL-BREF of the caregivers as the followings: physical capacity (PC) was 13.71 ± 2.35 , psychological well-being (PW) was 12.21 ± 2.55 , social relationship (SR) was 12.99 ± 2.43 and environment (EN) was 12.32 ± 2.38 . These mean scores were lower than the general population and slight higher than the caregivers of adults with intellectual disabilities in Taiwan. Finally, multiple stepwise regressions were conducted to examine the characteristics of caregiver and children/adolescents with intellectual disabilities will more likely explained the WHOQOL-BREF mean scores. The study found the following three factors: self-perceived health status, household income and stress from insufficient family support were significantly correlated to all four domains in multiple stepwise regression

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analyses. The results highlights that caregivers of children and adolescents with intellectual disabilities seem to display a lower WHOQOL-BREF mean score than the general population, probably for a combination of stress, health and household income factors. These finding must be taken into account in policy making to provide better and more specific supports and interventions for the caregivers of people with intellectual disabilities.

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1. Introduction

Quality of life (QOL) is the sum of a range of objectively measurable life conditions experienced by an individual which include physical health, personal circumstances, social relationships, functional activities and pursuits, and wider societies and economic influences. Subjective response to such conditions is the domain of personal satisfaction with life (Felce & Perry, 1995; Hsiao & Nixon, 2008; Simon, Rosen, Grossman, & Pratoski, 1995). QOL has emerged as an important outcome of service delivery for individuals with disabilities and their families (Park et al., 2003). Measures of QOL should become part of the standard battery of tools used to assess a people's health and well-being, and to identify aspects of life, physical, psychological, or social, that could be improved with intervention for the caregivers (Donohue, 2002). QOL assessments that are easily administered and which do not impose a great burden on the respondent are needed for use in large epidemiological surveys, clinical settings and clinical trials (Skevington, Lotfy, & O'Connell, 2004).

People with ID who are prevalent in diseases and higher healthcare utilization than the general population (Hsu et al., 2009; Lin et al., 2006, 2007; Lin, Lin, Yen, Loh, & Chwo, 2009) and they need the consistent help from caregivers in their daily livings. Caregivers, whether family members or paid, seem to have a rewarding, but very difficult job (Holt et al., 2004). Many studies (Grant, Ramcharan, McGrath, Nolan, & Keady, 1998; Todd & Shearn, 1996) found that caregivers of adults with intellectual disabilities (ID) report the existence of pervasive rewards and gratifications, as well as stresses, as part of their caregiving experience. Studies also highlighted the caregivers of people with ID bear higher burden of stress and needed further help than the general population (Lee et al., 2009; Lin, Lee, Loh et al., 2009; Lin, Lee, Yen et al., 2009). Compared with parents of healthy children, parents in the pervasive developmental disorder group reported impairment in physical activity and social relationships and worse overall perception of their quality of life and health (Mugno, Ruta, D'Arrigo, & Mazzone, 2007). Therefore, the caregiver assessment should enable the caregiver consider her or himself as a person with needs of her own (Williams & Robinson, 2001). The present study based on World Health Organization quality of life (WHOQOL-BREF) scale to examine QOL of the caregivers caring for their children and adolescents with ID in Taiwan, and the factors contributing to their QOL. The WHOQOL-BREF is a 26-item self-administered generic questionnaire, a short version of the WHOQOL-100-scale (Skevington et al., 2004). It emphasizes subjective experiences rather than objective life conditions (Olusina & Ohaeri, 2003).

2. Method

The present study employed a cross-sectional questionnaire survey, with the entire participants was composed of 1043 main family caregivers of children and adolescents with ID (age 6–18 years) who studying in 3 special schools in Taiwan. The survey materials included an invitational letter, the WHOQOL-BREF (Taiwan version) and a demographic and stress characteristic questionnaire. Originally, the WHOQOL-BREF is a 26-item instrument consisting of four domains: physical capacity (PC, 7 items), psychological well-being (PW, 6 items), social relationships (SR, 3 items), and environmental health (EN, 8 items). The PC domain includes items on mobility, daily activities, functional capacity and energy, pain, and sleep. The PW domain measures self-image, negative thoughts, positive attitudes, self-esteem, mentality, learning ability, memory and concentration, religion, and the mental status. The SR domain contains questions on personal relationships, social

support, and sex life. The EN domain covers issues related to financial resources, safety, health and social services, living physical environment, opportunities to acquire new skills and knowledge, recreation, general environment, and transportation (WHO, 1996). The WHOQOL-BREF has good to excellent psychometric properties of reliability and performs well in preliminary tests of validity (Skevington et al., 2004).

All domains are independent of each other. Score for each item within domains uses a scale from 1 to 5, with a higher score indicating a higher quality of life. Domain scores are calculated by multiplying the mean of all facet scores included in each domain by a factor of 4, and potential scores for each domain vary from 4 to 20 (WHO, 1994). It has been translated into the Chinese language in Taiwan and the WHOQOL-BREF-Taiwan version has put two more items (in SR and EN domains) in the scale (Yao, 2002, 2005). The authors have received the approval from professor Kai-Ping Yao, Department of Psychology, National Taiwan University, agreed to use the WHOQOL-BREF-Taiwan version in the study.

Data were collected by a structured questionnaire that was completed by the caregivers during April and May, 2008. A total of 1043 questionnaires were mailed to 3 special schools and asked the students with ID to delivery/collect the questionnaire to/from their main caregiver. A signed consent form and completed questionnaires were returned by the caregivers. In an attempt to increase the response rate, the response questionnaire was rewarded by the gift of a BMI calculator to thank participants for filling the questionnaire. There were 597 valid questionnaires (80% completion) were returned, with a response rate of 63.4%. The data were entered into a database and analyzed using SPSS 13.0 software.

3. Results

3.1. Characteristics of the caregivers and individuals with ID

Table 1 presents the characteristics of the respondents in the sample, 92% were parents of ID individuals and there were more females than males (72.7% vs. 27.3%). Average age was 43.6 ± 8.57 years, their household income mainly less than 60,000 NTD (70%) and most of the respondents was in level IV (47.7%) and V (32.1%) social class (incline to be lower classes). With regards to the characteristics of the children and adolescents with ID, Table 2 shows that 58.3% were boys and 41.7% were girls and the mean age was 16 ± 3.3 years. There were 50.7% children and adolescents reported have a moderate level of disability and 30% were severe level, and 31% were multiple disabilities which ID accompanied with other disabilities.

3.2. Social support/medical consultation and stress

Table 3 shows the stress and experience of seeking for medical consultation or social support among the respondents. The results revealed that only 20% have even seeking for social resource supports in the previous year, and 8.4% have used psychiatric consultations in the previous 3 years. Most of the respondents reported their health as fair (46.6%) and good (39.3%), and the remaining 10% felt poor or bad health status. In term of perceived stress among the caregivers, we used a scale from 1 to 5, with a higher score indicating a higher agree on the stress in their daily livings. The main sources of stress were “children’s interaction difficulty with people (3.64 ± 0.87)”, “children’s health problem (3.36 ± 0.8)”, “children’s behavioral problems (2.85 ± 0.82)”, and “insufficient family support (2.74 ± 0.77)”.

3.3. WHOQOL-BREF score of the caregivers

We used mean and SD to describe the quality of life among the caregivers. The mean scores of the PC, PW, SR and EN are presented in Table 4. The mean of PC (13.71 ± 2.35) was slightly higher than other domains, PW was 12.21 ± 2.55 , SR was 12.99 ± 2.43 and EN was 12.32 ± 2.38 .

Table 5 showed the relationship between WHOQOL-BREF mean score and the characteristics of the respondents. Female caregivers were statistical higher in SR mean score than male caregivers

Table 1
Characteristics of the caregivers.

Characteristics	N (%)	Mean (S.D.)
Relation to children with ID (N = 588)		
Parent	541 (92.0)	
Other	47 (8.0)	
Gender (N = 582)		
Female	423 (72.7)	
Male	159 (27.3)	
Age (N = 556)		43.6 (8.57)
Social class (N = 545) ^a		
I (score: 52–55)	5 (0.9)	
II (score: 41–51)	56 (10.3)	
III (score: 30–40)	49 (9.0)	
IV (score: 19–29)	260 (47.7)	
V (score: 11–18)	175 (32.1)	
Marital status (N = 581)		
Unmarried	15 (2.6)	
Married	486 (83.6)	
Divorce	54 (9.3)	
Widow/widower	26 (4.5)	
Household income; NTD (N = 569)		
<20,000	98 (17.2)	
20,000–39,999	183 (32.2)	
40,000–59,999	121 (21.3)	
60,000–79,999	42 (7.4)	
80,000–99,999	19 (3.3)	
100,000–119,999	17 (3.0)	
120,000–149,999	15 (2.6)	
≥ 150,000	15 (2.6)	
Unknown	59 (10.4)	
Religion (N = 580)		
No	84 (14.5)	
Buddhism	214 (36.9)	
Dao	259 (44.7)	
Christian	15 (2.6)	
Catholic	5 (0.9)	
Other	3 (0.5)	

^a Two factor index of social position; calculated by weighting the factors of education and occupation (score range: 11–55).

($p = 0.004$). The factors of household income and social class were significantly correlated to all the four domains in ANOVA or Pearson's correlation analyses. The other factors such as "relation to ID individual", marital status, age and religion of the caregivers were not statistical related to their WHOQOL-BREF mean score. In term of caregiver's perceived stress to the WHOQOL-BREF mean score, all of the stress sources "insufficient family support", "children's behavioral problems", "children's health problem", "children's interaction with people", and "other stress" were significantly correlated to quality of life mean scores in four domains ($p < 0.001$; Table 6).

3.4. WHOQOL-BREF score, individuals with ID and seeking for social support

A one-way ANOVA or t -test was used to compare the caregiver's WHOQOL-BREF mean score separately for each characteristic of the ID individual. "Age" of the children and adolescents was the sole factor to affect the PC, PW and SR ($p < 0.05$), while his/her gender, disability level and accompanied with multiple disabilities were not found to affect the respondent's quality of life mean scores (Table 7). The experience of seeking for professional help among the respondents, results found that those caregivers have used psychiatric consultations tend to be significant lower mean scores in

Table 2
Characteristics of the children and adolescents with ID.

Characteristics	N (%)	Mean (S.D.)
Gender (N = 591)		
Boys	346 (58.3)	
Girls	247 (41.7)	
Age (N = 542)		16.0 (3.3)
Disability level (N = 580)		
Mild	47 (8.1)	
Moderate	294 (50.7)	
Severe	174 (30.0)	
Profound	65 (11.2)	
Multiple disabilities (N = 574)		
Yes	178 (31.0)	
No	396 (69.0)	

Table 3
Stress and experience of seeking for medical consultation or social support.

Characteristic	N (%)
Social support in the previous year (N = 544)	
No	435 (80.0)
Yes (1–3 times)	55 (10.1)
Yes (4–6 times)	11 (2.0)
Yes (7–10 times)	5 (0.9)
Yes (Unclear)	38 (7.0)
Psychiatric consultation in the previous 3 years (N = 569)	
No	521 (91.6)
Yes	48 (8.4)
Self-perceived health status (N = 582)	
Excellent	24 (4.1)
Good	229 (39.3)
Fair	271 (46.6)
Poor	54 (9.3)
Bad	4 (0.7)
Sources of stress ^a	
Insufficient family support (N = 541)	2.74 (0.77)
Children's behavioral problems (N = 552)	2.85 (0.82)
Children's health problems (N = 551)	3.36 (0.80)
Children's interaction with people (N = 563)	3.64 (0.87)
Other (N = 560)	3.70 (0.65)

^a Score for each source uses a scale from 1 to 5, with a higher score indicating a higher stress.

Table 4
WHOQOL-BREF mean scores of the caregivers.

Domain/facet	Mean (S.D.)
PC (N = 581)	13.71 (2.35)
PW (N = 572)	12.21 (2.55)
SR (N = 582)	12.99 (2.43)
EN (N = 584)	12.32 (2.38)

PC, physical capacity (score 4–20); PW, psychological well-being (score 4–20); SR, social relationships (score 4–20); EN, environment (score 4–20).

Table 5
Relationship between WHOQOL-BREF score and caregiver characteristics.

Characteristics		PC	PW	SR	EN
Relation to ID					
Parent	Mean	13.71	12.18	12.95	12.30
	N (%)	526 (90.5)	518 (90.6)	526 (90.4)	528 (90.4)
Other	Mean	13.78	12.53	13.45	12.50
	N (%)	55 (9.5)	54 (9.4)	56 (9.6)	56 (9.6)
F-Value		-0.213	-0.977	-1.463	-1.463
p-Value		0.831	0.329	0.144	0.144
Gender					
Male	Mean	13.84	12.42	12.49	12.11
	N (%)	156 (27.5)	153 (27.3)	156 (27.5)	157 (27.5)
Female	Mean	13.65	12.09	13.15	12.35
	N (%)	411 (72.5)	407 (72.7)	412 (72.5)	413 (72.5)
t-Value		0.882	1.369	-2.914	-1.079
p-Value		0.378	0.172	0.004	0.281
Marital status					
Unmarried	Mean	13.64	12.36	13.47	12.56
	N (%)	15 (2.6)	15 (2.7)	15 (2.6)	15 (2.6)
Married	Mean	13.73	12.22	13.01	12.37
	N (%)	477 (84.1)	467 (83.7)	477 (84.0)	478 (84.0)
Divorce	Mean	13.46	11.92	12.66	11.75
	N (%)	49 (8.6)	51 (9.1)	50 (8.8)	50 (8.8)
Widow/widower	Mean	13.68	11.49	12.50	11.68
	N (%)	26 (4.7)	25 (4.5)	26 (4.6)	26 (4.6)
F-Value		0.613	0.847	0.865	1.675
p-Value		0.607	0.469	0.459	0.171
Household income; NTD					
<20,000	Mean	12.98	11.14	12.18	11.13
	N (%)	95 (19.2)	92 (18.8)	95 (19.2)	96 (19.3)
20,000–39,999	Mean	13.55	11.99	12.87	11.89
	N (%)	178 (35.9)	175 (35.8)	178 (35.9)	178 (35.7)
40,000–79,999	Mean	14.13	12.75	13.31	13.01
	N (%)	159 (32.0)	159 (32.5)	159 (32.0)	159 (31.9)
≥80,000	Mean	14.59	13.08	13.78	13.77
	N (%)	64 (12.9)	63 (12.9)	64 (12.9)	65 (13.1)
F-Value		8.518	11.776	7.120	25.920
p-Value		<0.01	<0.01	<0.01	<0.01
Religion					
No	Mean	13.82	11.80	12.88	12.28
	N (%)	83 (14.7)	81 (14.6)	82 (14.5)	83 (14.6)
Yes	Mean	13.70	12.28	13.04	12.34
	N (%)	481 (85.3)	474 (85.4)	483 (85.5)	485 (85.4)
t-Value		0.436	-1.553	-0.543	-0.209
p-Value		0.663	0.121	0.588	0.834
Age					
N		542	537	543	544
Pearson's r-value		0.055	0.031	-0.047	0.044
p-Value		0.204	0.474	0.275	0.305

Table 5 (Continued)

Characteristics	PC	PW	SR	EN
Index of social position				
<i>N</i>	534	526	535	535
Pearson's <i>r</i> -value	0.137	0.173	0.095	0.221
<i>p</i> -Value	0.001	<0.01	0.028	<0.01

four domains, while caregivers self-perceived healthier status were more likely to get higher quality of life mean scores ($p < 0.001$) (Table 8).

3.5. Regression model of WHOQOL-BREF mean score

Finally, a multiple stepwise regression was conducted to examine which characteristics of caregiver and ID individual will more likely explained the WHOQOL-BREF mean scores, with the statistically significant factors listed in Tables 5–8 identified as independent variables (Table 9). The model revealed that the factors of self-perceived health status, stress from insufficient family support, other stress, household income, children age, experience of psychiatric consultation can predict 48.1% variation of caregivers' PC mean score. In the domain of PW, those factors of stress from insufficient family support, self-perceived health status, other stress, household income, stress from children's behavioral problem, social class and children's age can predict 42.2% variation of this domain. With regards to the regression model in SR domain, factors of stress from insufficient family support, self-perceived health status, female caregiver and household income can predict 30.4% variation of caregivers' SR mean score. The final prediction model of EN, factors of stress from insufficient family support, household income, other stress, self-perceived health status, and social class can explain 45.7% variation of caregivers' EN mean score.

4. Discussions

The main purposes of this study were to investigate the QOL and determine the risk factors for caregivers of children and adolescents with ID. In term of QOL measures among the respondents, we

Table 6
Relationship between WHOQOL-BREF score and caregiver's stress.

Source of stress	PC	PW	SR	EN
Insufficient family support				
<i>N</i>	531	526	532	532
Pearson's <i>r</i>	−0.489	−0.471	−0.450	−0.521
<i>p</i> -Value	<0.001	<0.001	<0.001	<0.001
Children's behavioral problems				
<i>N</i>	542	535	542	542
Pearson's <i>r</i>	−0.345	−0.379	−0.289	−0.328
<i>p</i> -Value	<0.001	<0.001	<0.001	<0.001
Children's health problems				
<i>N</i>	541	535	541	541
Pearson's <i>r</i>	−0.368	−0.339	−0.246	−0.350
<i>p</i> -Value	<0.001	<0.001	<0.001	<0.001
Children's interaction with people				
<i>N</i>	552	545	553	553
Pearson's <i>r</i>	−0.290	−0.309	−0.240	−0.312
<i>p</i> -Value	<0.001	<0.001	<0.001	<0.001
Other stress				
<i>N</i>	549	543	551	551
Pearson's <i>r</i>	−0.372	−0.397	−0.297	−0.432
<i>p</i> -Value	<0.001	<0.001	<0.001	<0.001

Table 7
Relationship between WHOQOL-BREF score and individuals with ID.

Characteristic		PC	PW	SR	EN
Gender					
Boy	Mean	13.61	12.14	12.86	12.22
	N (%)	339 (58.6)	336 (59.1)	341 (58.9)	342 (59.0)
Girl	Mean	13.88	12.31	13.19	12.47
	N (%)	239 (41.4)	233 (40.9)	238 (41.1)	238 (41.0)
<i>t</i> -Value		-1.354	-0.75	-1.611	-1.206
<i>p</i> -Value		0.176	0.453	0.108	0.228
Age (years)					
3–6	Mean	12.29	10.82	12.18	11.29
	N (%)	22 (3.8)	22 (3.9)	22 (3.8)	22 (3.8)
7–12	Mean	13.89	12.54	13.98	12.72
	N (%)	43 (7.4)	43 (7.6)	49 (8.5)	43 (7.4)
13–15	Mean	14.16	12.75	13.34	12.68
	N (%)	52 (9.0)	53 (9.2)	53 (9.2)	53 (9.1)
>15	Mean	13.69	12.16	12.90	12.27
	N (%)	461 (79.8)	451 (79.3)	461 (79.5)	463 (79.7)
<i>F</i> -Value		3.492	3.337	3.815	2.285
<i>p</i> -Value		0.016	0.019	0.010	0.078
Multiple disabilities					
No	Mean	13.82	12.32	12.98	12.36
	N (%)	385 (69.0)	376 (68.2)	384 (68.7)	386 (68.8)
Yes	Mean	13.47	12.02	13.01	12.17
	N (%)	173 (31.0)	175 (31.8)	175 (31.3)	175 (31.2)
<i>t</i> -Value		1.584	1.306	-0.096	0.904
<i>p</i> -Value		0.114	0.192	0.924	0.366
Disability level					
Mild	Mean	13.83	12.64	12.89	12.85
	N (%)	45 (8.0)	45 (8.1)	45 (7.9)	45 (7.9)
Moderate	Mean	13.81	12.24	12.97	12.35
	N (%)	285 (50.5)	275 (49.5)	284 (50.3)	285 (50.3)
Severe	Mean	13.58	11.98	13.05	12.13
	N (%)	172 (30.5)	172 (31.0)	173 (30.6)	173 (30.5)
Profound	Mean	13.70	12.39	13.08	12.42
	N (%)	62 (11.0)	63 (11.4)	63 (11.2)	64 (11.3)
<i>F</i> -Value		0.353	1.029	0.087	1.154
<i>p</i> -Value		0.787	0.379	0.967	0.327

used WHOQOL-BREF health survey to examine their perception on satisfaction to their living. The WHOQOL-BREF was developed as a short version of the WHOQOL-100 for use in situations where time is restricted, respondent burden must be minimized or fewer details are necessary (Skevington et al., 2004). The Taiwan version of WHOQOL-BREF showed it has very good reliabilities and validities (Yao, 2002, 2005), and it is an appropriate health-related quality of life instrument for populations with special needs in Taiwan (Chiu et al., 2006; Chou, Lin, Chang, & Schalock, 2007; Yang, Kuo, Wang, Lin, & Su, 2005).

Comparing the Taiwan national norms of WHOQOL-BREF (Yao, 2005), we found the mean scores in four domains of the caregivers for children and adolescents with ID were lower than the general population. Their mean scores in each domain of the study respondents to the general population in Taiwan were: PC (13.71 ± 2.35 and 15.31 ± 1.93), PW (12.21 ± 2.55 and 13.80 ± 2.19), SR (12.99 ± 2.43

Table 8

Relationship between WHOQOL-BREF score and experience of seeking for medical consultation or social support.

Characteristic		PC	PW	SR	EN
Social support					
Yes	Mean	13.72	12.55	13.26	12.54
	N (%)	105 (19.7)	106 (20.1)	106 (19.9)	106 (19.8)
No	Mean	13.78	12.15	12.93	12.31
	N (%)	427 (80.3)	422 (79.9)	428 (80.1)	429 (80.2)
t-Value		0.253	-1.465	-1.272	-0.863
p-Value		0.800	0.144	0.204	0.389
Psychiatric consultation					
Yes	Mean	11.72	10.59	11.77	11.08
	N (%)	47 (8.4)	46 (8.3)	47 (8.4)	47 (8.4)
No	Mean	13.91	12.35	13.12	12.45
	N (%)	510 (91.6)	506 (91.7)	511 (91.6)	513 (91.6)
t-Value		6.297	4.556	3.734	3.793
p-Value		<0.01	<0.01	<0.01	<0.01
Self-perceived health					
Healthy	Mean	14.85	13.38	13.95	13.26
	N (%)	248 (43.5)	243 (43.2)	247 (43.3)	248 (43.4)
Fair	Mean	13.25	11.65	12.54	11.80
	N (%)	266 (46.7)	266 (47.2)	268 (46.9)	268 (46.9)
Unhealthy ^a	Mean	11.01	9.80	11.30	10.82
	N (%)	56 (9.8)	54 (9.6)	56 (9.8)	56 (9.7)
F-Value		93.978	70.066	43.465	42.799
p-Value		<0.01	<0.01	<0.01	<0.01

^a Healthy: excellent + good; unhealthy: poor + bad.

and 14.22 ± 2.05) and EN (12.32 ± 2.38 and 13.33 ± 2.05). The results were slight higher than the caregivers of adults with ID which PC was 13.5 ± 2.59 , PW was 12.11 ± 2.33 , SR was 12.84 ± 2.19 and EN was 12.09 ± 2.15 (Chou et al., 2007). The possible reason maybe the age effect, our study respondents tended to be younger than the caregivers of adults with ID.

PW is the lowest satisfactory domain of the caregivers in the present study. Walden, Pistrang, and Joyce (2000) indicated that PW may be particularly adversely affected by the years of caregiving. In addition, there is a strong association between caregiver's distress and the emotional and behavioral needs of children with ID (Emerson, Robertson, & Wood, 2004). Lam, Giles, and Lavander (2003) recruited 47 carers of children with moderate to severe ID, a multiple regression analysis indicated that carers' expressed emotion, psychological well-being, appraisal of their children's behavior, their children's communication skills and respite usage predicted 62% of the variance in their perceived stress scores.

The study found the following three factors: self-perceived health status, household income and stress from insufficient family support were significantly correlated to all four QOL domains in multiple stepwise regression analyses. The results are similar to the study of Chou et al. (2007), which pointed out the strongest predictors of caregivers QOL were the caregiver's health status, their family income and the disability severity of the adults with ID. Emerson et al. (2004) also found that elevated rates of psychological distress of the caregivers of children and adolescents may be mediated by socio-economic deprivations.

We also found many factors such as age of children and adolescents was slightly correlated to PC and PW means scores of the caregivers. In addition to the age of the children with ID, we should pay attention to the age of the caregivers. As Minnes, Woodford, and Passey (2007) concluded that caregiver perceptions of ageing and stress emerged as significant mediators of the relationship between caregiver health and depression. However, resources and appraisals did not emerge as significant mediators in analyses using quality of life as a positive outcome.

Table 9

Multiple stepwise regression model of WHOQOL-BREF score in the caregivers.

Domain	Variable	R ²	β	B	p-Value
PC	Constant			13.120	
	Self-perceived health	0.302	0.383	1.208	<0.001
	Family support	0.427	-0.259	-0.761	<0.001
	Other stress	0.450	-0.160	-0.545	<0.001
	Household income	0.468	0.127	0.177	0.001
	Children age	0.475	0.092	0.058	0.016
	Psychiatric consultation	0.481	-0.082	-0.664	0.039
	Fitness test; $F = 56.474, p < 0.001$				
PW	Constant			12.779	
	Family support	0.242	-0.175	-0.560	0.001
	Self-perceived health	0.331	0.283	0.972	<0.001
	Other stress	0.377	-0.227	-0.843	<0.001
	Household income	0.398	0.105	0.157	0.021
	Children's behavioral problems	0.409	-0.122	-0.361	0.013
	Social class	0.416	0.101	0.022	0.022
	Children age	0.422	0.081	0.056	0.044
Fitness test; $F = 38.100, p < 0.001$					
SR	Constant			11.288	
	Family support	0.214	-0.339	-1.057	<0.001
	Self-perceived health	0.280	0.282	0.942	<0.001
	Female caregiver	0.293	0.109	0.580	0.013
	Household income	0.304	0.109	0.158	0.017
	Fitness test; $F = 39.660, p < 0.001$				
EN	Constant			14.328	
	Family support	0.283	-0.280	-0.851	<0.001
	Household income	0.359	0.227	0.324	<0.001
	Other stress	0.415	-0.242	-0.861	<0.001
	Self-perceived health	0.448	0.196	0.640	<0.001
	Social class	0.457	0.099	0.020	0.016
	Fitness test; $F = 64.077, p < 0.001$				

The factor of social class was used as a predictor of QOL in the present study. It is significant correlated to PW and EN in multiple stepwise regression models. We used the factors of education and occupation to describe the respondent's social class. This classification was based on assumption which developed by Hollingshead and Redlich (1958), the index of social position was developed to meet the need for an objective, easily applicable procedure to estimate positions individuals occupy in the status structure in the society. They concluded that there was a significant relationship between social class and mental illness both in type and severity of mental illness suffered as well as in the nature and quality of treatment that is provided (Pole, 2007).

The results highlights that caregivers of children and adolescents with intellectual disabilities seem to display a lower WHOQOL-BREF mean score than the general population, probably for a combination of stress, health and household income factors. These finding must be taken into account in policy making to provide better and more specific supports and interventions for the caregivers of people with intellectual disabilities. In addition, the findings also call for a regular program of comprehensive intervention of caregivers caring for people with ID, to address QOL domains and provide caregiver education and supports, in order to enhance their quality of life. The initial intervention should be easily accessible and user-friendly information resource was needed for caregivers of people with ID.

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