

The Relationship of the Quality of Life and Activity Limitations of Persons with Orthopedic Disability

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Abstract – Walking difficulties influence both functional motor motion and fine motor motion, such as hand control. Included are conditions that make it hard to move, such as amputation, paralysis, cerebral palsy, stroke, multiple sclerosis, muscular dystrophy, arthritis, spinal cord injuries, and others. The study used WHOQOL-BREF-DIS and IMPACT-S to determine PWDs' quality of life and activity restrictions. It examines the link between quality of life and activity limitation, as well as discrimination, autonomy, and inclusion. Males have a higher quality of life, but females have more activity limitations. Discrimination and autonomy domains of WHOQOL-BREF-DIS are not connected with activity participation; inclusion and overall quality of life are. In conclusion, persons with orthopedic disabilities' level of inclusion and overall QOL in society, specifically their satisfaction with communicating with others, satisfaction with their ability to participate in social and local activities, and other people's acceptance and respect, are affected by their activity participation.

Keywords – Activity limitation, Quality of Life, Walking disability, Persons with Disability

I. INTRODUCTION

According to the 2010 Census of Population and Housing (CPH), 16% of the population was disabled. 1.57 percent of the country's 92.1 million households were disabled. In the 2000 CPH, 935,551 people with impairments (1.23%) were recorded. NCR has 167 thousand PWDs, the second-most. Men with disabilities outnumbered women. Males made up 50.9% of PWD in 2010, while females made up 49.1%, with 104 males for every 100 females. Male PWDs outnumbered female PWDs from 0 to 64 years old, while female PWDs outnumbered male PWDs 65 and older. For every five PWD, one (18.9%) was 0 to 14 years old, three (59.0%) were working-age (15-64), and one (22.1%) was 65 and over. Walking difficulties influence gross and fine motor skills, especially hand control. Amputation, paralysis, cerebral palsy, stroke, MS, muscular dystrophy, arthritis, and spinal cord damage can impede mobility (University of Washington, 2012).

Physically challenged people can't perform typical social functions due to cultural limits. Physically challenged persons have more social limits than healthy people, who have lower well-being and quality of life (QOL). (Rajati, 2018) This limitation in social connections and social networks may be caused by social isolation, which limits participation and influence in social activities. PWDs were also perceived as people who were unable to perform daily tasks due to their condition (Kissow, 2015). Due to limited involvement, disabled persons endure inadequate health, low income, a lack of social and economic participation, higher poverty rates, and increasing dependence. (2015)

Recognizing PWDs' active involvement is very crucial. This study examines the link between PWDs' quality of life and activity constraints. The study's results will show how these two variables are related. The study's results will be used to establish strategies and enhance policies for increasing physical activity participation for PWDs, recognizing their presence in society, and finding their position in society.

Disability is more than just a health issue or characteristic; it also indicates difficulties in societal and physical movements (Kuvalekar, Kamath, & Chandrasekaran, 2015). People with disabilities, especially orthopedic ones, struggle with physical activity. PWDs were also perceived as people who were unable to perform daily tasks due to their condition (Kissow, 2015). This affects their social participation. Poor health outcomes, low education, a lack of social and economic participation, higher poverty rates, and increasing dependency are activity limits for PWDs, according to Kuvalekar, Kamath, and Chandrasekaran (2015). Kyo-Man Koo, Chun-Jong Kim, & Geon-Woo Seo (2016) said PWDs perceive personal, physical, and environmental constraints as restrictions. Kissow (2015) introduced a communication barrier that affects social involvement in cultural or recreational clubs.

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PWDs face activity limits, discrimination, and exclusion from social, cultural, political, and economic life (Marella, Devine, & Vaughan, 2016). In a 2011 study, Gallagher et al. found that significant limb amputees' QOL was affected by climate, physical environment, and financial concerns. Mutlu, Bugusan, and Kara (2017) found extrinsic barriers in a comparable investigation. Some are public servants and helpers. Physical surroundings and money are also external influences, as earlier research indicated. Climate change is a factor in PWDs' difficulty utilizing their residual limb due to its sensitivity. Perspiration inhibits the comfort of the residual limb, and snow and/or wet leaves can hinder the patient's movement and physical activity. Some say their prosthesis impairs their activity. Leisure activities, job seeking, and employment were also restricted.

Independent ambulation affects a person's quality of life, according to Agrawal, Kalra, and Joshi (2017). The Time-Up-and-Go (TUG) test and Short Form Health Survey showed a positive association (SF-36). The study found a positive link between the Living Condition Index (LCI) and SF-36, indicating that amputees' quality of life improves with greater mobility and independence. Long-term prosthesis users can adapt and find methods to make a living, research shows. A study found that playing sports helps impaired persons adapt socially and develop their personalities. The study compared the quality of life of amputees who do sports to those who are inactive (Yazici & Tasmektepligil, 2018). Researchers found that amputees' quality of life increases as their sadness lowers. Restricting participation for persons with orthopedic limitations reduces their quality of life. Lack of walking stability, muscle exhaustion, pain, stiffness, bladder and urinary difficulties, depression, thermoregulation, and fear of harm were the most common demotivators for functioning, bodily function and systems, and activity engagement. Fluctuating symptoms and weariness demotivated all progressing patients. Accessibility, pricing, logistics, and limited provider awareness and experience are environmental restrictions. Social support is a persistent physical activity component and a facilitator. Individual demotivators include lack of excitement, self-consciousness, public humiliation, anxiety, anger, and dissatisfaction. Rajati, Ashtarian, and Hosseini (2018) linked disability-related activity limits to quality of life. Anxiety and depression affect PWDs' quality of life. Schmidt, Wallander, and Biasni (2014) questioned 2000 teens with mobility limitation about life stress, social competence, family functioning, peer social engagement, total disability, and age. Results suggest that increased life stress and reduced quality of life might cause anxiety and sadness, which lowers adolescent self-esteem. Yazici and Tasmektepligil (2018) found that people with leg and foot amputations had a higher level of depression than those with upper extremity amputations due to limited mobility. They noted that disabled individuals are the most stigmatized and have a lesser quality of life than non-disabled persons.

II. METHODS

Study Design

This study utilized a descriptive correlational design in measuring and analyzing the relationship between the quality of life and activity limitations of persons with orthopedic disabilities. The descriptive area in this study included the demographics of the participants which consisted of the name, age, marital status, educational attainment, employment, and type of orthopedic disability. Persons with orthopedic disabilities, specifically community dwellers, were the participants of the study, regardless of the type and specific impairment. Included in the study were persons with orthopedic disability who are community-dwelling, 18 years old and above regardless of their sex, literate in English and Tagalog language, and without co-existing conditions such as

mental disorder/s rendering them ineligible to answer the questionnaires that will be provided. Excluded in the study were participants with an orthopedic disability who were under the age of 18 years old and who were institutional dwellers with the presence of mental disorder/s that may affect the ability of the participant to answer the questionnaires given.

The participants were selected using G*power software for 2-tailed correlation with power of 0.95, large effect size of 0.5 and alpha error of 0.05. The number of respondents of the study is 40.

Instrumentation

WHOQOL-BREF & Disabilities Questionnaire

The World Health Organization Quality of Life- BREF (WHOQOL-BREF) was developed as an abbreviated version of the WHOQOL-100. The WHOQOL-100 was developed as an assessment tool of quality of life that is applicable cross-culturally. In this study, the Disabilities module was taken in conjunction with the WHOQOL-BREF. It has a total of 13 questions, wherein one general question is allotted for the impact of disability to the respondent. The remaining 12 single items are divided into 3 facets namely: discrimination (3 items: items 28, 29 & 30), autonomy (3 items: items 31, 32 & 33), and inclusion (6 items: items 34-39). The level of autonomy is based on how the respondent feels if they are in control of their own life when it comes to decision making, expression, and personal development. Scores from the 3 facets or the individual values of the 12 items were summed up to produce an overall or general score for the quality of life of physically disabled adults, denoted as the “total score” of the WHOQOL- DIS module.

IMPACT-S Screener

The ICF-Measure of Participation and Activities Screener (IMPACT-S) is an instrument used to assess the limitations in activities and participation of the participants. It is a self-reported tool in which the questions are concerned with the limitations in their daily life because of their health or disability. The IMPACT-S has a total of 32 questions that are distributed across 9-scales, in connection to the 9 activity and participation domains of the ICF. The questions were answered using a 4-point limitation rating scale (No, no limitations whatsoever; Yes, some limitations; Yes, considerable limitations; Yes, I cannot do that at all). 9 scale scores (one from each ICF domain) and 2 subtotal scores for activities and participation were computed in addition to the total score. All scores were converted to a 0 to 100 scale wherein a lower score indicates that the participant experienced greater limitations in activity participation, and a higher score indicates higher levels of participation.

Data Collection Methods

The researchers used the consent form approved by the research adviser and upon the recommendation of the subject professor. The principle of *Autonomy* was also employed in the study by ensuring that the participation in this study was completely voluntary. Subjects had the right to decide whether to participate in the study or not. The researchers did not anticipate any risk during the entire duration of the implementation process, nevertheless, they also had the right to withdraw from the study anytime they want. For confidentiality purposes, the records of this study is kept private by the researchers. The results did not include any information that will make it possible for others to specifically identify each subject. Research records is kept in an electronic file protected by a password that only the researchers will have access to. During the implementation phase, the questionnaires were sent individually through their email or Facebook accounts. Each participant answered the questionnaire individually between 15-20 minutes using Google® Forms. Also, they were asked to contact the researcher through a phone call or email if they have any further questions regarding the study. For confidentiality purposes, the records of this study were kept private by the researchers. The results did not include any information that will make it possible for others to specifically identify each subject. Research records were kept in an electronic file protected by a password that only the researchers will have access to. The principle of *Veracity* was also employed in the study by adhering that all information and data that were gathered and used in the study were true, non-biased, accurate, reliable, and not changed, manipulated and be based on biased opinions.

III. RESULTS

Table 1. Demographics of the Respondents

Characteristics	Number of respondents (n=40)	Percentage
Sex		
Male	18	45.0
Female	22	55.0
Age		
Less than 24 years old	4	10.0
25 to 44 years old	9	22.5

45 to 64 years old	23	57.5
Greater than 65 years old	4	10.0
Marital Status		
Married	20	50.0
Single	12	30.0
Separated	1	2.5
Widowed	5	12.5
Living with Partner	2	5.0
Educational Attainment		
Elementary Education	6	15.0
High School	16	40.0
College	11	27.5
Vocational Training	3	7.5
Master's Degree	3	7.5
Post-Graduate (Doctorate)	1	2.5
Type of Orthopedic Disability		
Neuromuscular	8	20.0
Degenerative	7	17.5
Musculoskeletal	25	62.5

Respondents aging between 45 to 64 years old consist majority of the respondents with 23 or 57.5%. In terms of marital status, 20 (50%) of the respondents are married, followed by 12 (30%) who are single, 5 (12.5%) are widowed, 2 (5%) is currently living with their partners while only 1 (2.5%) respondent is separated. Lastly, the majority or 62.5% (25) of the respondents have a musculoskeletal disability, 20% (8) have a neuromuscular disability while the remaining 17.5% (7) respondents suffer from degenerative diseases leading to an orthopedic disability.

Table 2. WHO Quality of Life (QOL) BREF results among 4 domains stratified by Sex.

		WHOQOL BREF Dimensions (X ± SD)¹				
	N=40	Physical	Psychological	Social	Environmental	Over-all Score
Male	18	51.78 ± 8.91	58.11 ± 8.36	52.33 ± 12.41	49.39 ± 6.59	53.07 ± 5.85
Female	22	51.45 ± 13.05	59.00 ± 13.26	54.77 ± 16.06	48.45 ± 13.55	52.72 ± 12.57
TOTAL	40	51.60 ± 11.24	58.60 ± 11.20	53.68 ± 14.41	48.88 ± 10.86	52.88 ± 10.00

¹Values presented in X represents the Mean scores and standard deviation

Table 2 shows the mean scores and SD for all the four domains in the WHO Quality of Life (QOL) BREF Questionnaire, which is stratified by sex. In the physical domain, males have a mean score of 51.78, which is higher than females, with a mean score of 51. In the environmental domain, males tend to have a higher mean score, since they have a score of 49.39, while females have a mean score of 48.45. Among the four domains, the psychological domain has a higher score, with a mean score of 58.60, followed by the social domain, with a mean score of 53.68. The physical domain has a mean score of 51.60, while the environmental domain has the lowest mean score, which is 48.88.

Table 3. WHO Quality of Life (QOL) – Disability results among 3 domains stratified by Sex

		WHO QOL DISABILITY Dimensions (X ± SD)			
	N=40	Discrimination	Autonomy	Inclusion	Over-all Score
Male	18	51.18 ± 14.31	58.10 ± 11.03	56.47 ± 12.41	55.25 ± 5.74
Female	22	45.65 ± 17.88	54.32 ± 19.29	52.69 ± 13.76	50.89 ± 8.11
TOTAL	40	48.14 ± 16.41	56.03 ± 16.03	54.39 ± 13.14	52.85 ± 7.39

¹Values presented in X represents the Mean scores and standard deviation.

Among the 18 males and 22 females who answered the WHOQOL Disability Module, the males scored higher in discrimination, with a mean of 51.18, as compared with females, who scored with a mean of 46.65. The discrimination domain of the WHOQOL Disability Module portrays the state of being treated less well or put at a disadvantage for a reason that relates to the participants having a disability. The questions asked about discrimination include their perception of how fair they are treated, if they need someone to stand up for them when they have problems, and if they worry about the future. As for the inclusion domain, which portrays having the opportunity to participate in socially accepted life roles and activities while having a sense of respect and acceptance from people, the males scored higher, with a mean of 56.47, as compared to females, who scored with a mean of 52.69.

All in all, the males scored higher across all domains, with a mean of 55.25 with a standard deviation of + 5.74, as compared to females, who scored with a mean of 50.89 with a standard deviation of + 8.11.

Table 4. IMPACT-S Screener Score stratified by Sex

	n=40	IMPACT-S Screener Total Score (X ± SD)
Male	18	62.73 ± 9.13
Female	22	57.91 ± 13.60
TOTAL	40	60.08 ± 11.91

¹Values presented in X represents the Mean scores and standard deviation.

A higher score in the IMPACT-S screener denotes higher levels of participation while a lower score indicates greater limitations in activity participation. As seen in table 4, among the 18 males and 22 females who participated in the study and answered the IMPACT-S Screener, results show that males scored higher with a mean score of 62.73 as compared to females with a mean score of 57.91. This means that among the subjects, males have a higher level of participation while females experience greater limitations in terms of activity participation.

Table 5. Correlation of WHOQOL-Disability domain and over-all score with the IMPACT-S screener over-all score

WHO QOL Disabilities Domain	IMPACT-S Screener		Decision
	r value¹	p-value²	
Discrimination	0.074	0.649	Accept Null Hypothesis
Autonomy	0.137	0.401	Accept Null Hypothesis
Inclusion	0.417	0.007	Reject Null Hypothesis
Over-all Score	0.477	0.002	Reject Null Hypothesis

¹Spearman r value classification established by Dancey and Reidy, 2004

²Significant at p value <0.05 (95% confidence interval)

Table 5 shows the correlation by utilizing the r-value and p-value for all the three domains in the WHOQOL Disability module comparing to the activity participation of the respondents. In determining the strength of the relationship between the of WHOQOL-Disability domain and overall score with the IMPACT-S screener overall score, Spearman r value classification established by Dancey and Reidy, 2004 was used, wherein: R-value of 0.01-0.19 corresponds to no or negligible relationship, r-value of 0.20-0.29 corresponds to weak relationship, r-value of 0.30-0.39 corresponds to moderate relationship, r-value of 0.40-0.69 corresponds to a strong relationship, and r-value of ≥0.70 corresponds to a very strong relationship. For the overall score, the r-value of 0.477 denotes a strong relationship between the WHOQOL-Disability overall score and the IMPACT-S screener overall score and a p-value of 0.002 thereby rejecting the null hypothesis.

IV. DISCUSSION

Dammeyer & Chapman (2018) found that women with physical disabilities were more likely than men to report and experience discrimination. This supports the WHOQOL-DIS result that males scored higher in the discrimination area than females. In terms of autonomy, Bekker & Assen (2008) show that females with physical disability are more likely to be sensitive in affecting their autonomy-connectedness than males because men have a slightly higher level of self-awareness and capacity to manage new situations in new environments or settings. In terms of inclusion, the findings conflict with Barr & Bracchitta (2012), who found that women with physical disabilities are more likely to be included and accepted than men. Male individuals participate more actively than females, according to the results. David, Raju, and Mendis (2019) discovered in a cross-sectional study about participation limits of persons with leprosy in four Indian states, females experience more restrictions than males. Brynjolfsdottir, Palmadottir, and Arnadottir (2021) used the Late-Life Function and Disability Instrument to assess the activities

and involvement of 65-91-year-olds. Most participants had more lower extremity problems than upper extremity problems. Women experienced more difficulties with activities than men, although both described self-care and social life constraints. Devasenapathy et al. (2020) showed that among men and women scheduled for Total Hip Arthroplasty for degenerative osteoarthritis, females were more likely to encounter participation restriction due to high impairment levels. Their functioning ability was lower than men's. Findings reveal a link between orthopedic patients' quality of life and activity limits. As quality of life rises, activity limitation falls, and vice versa. This conclusion supports Agrawal, Kalra, and Joshi's 2017 study indicating independent ambulation affects quality of life. The study found a positive link between the Living Condition Index (LCI) and SF-36, indicating that more mobility and independence improve amputees' quality of life. According to Yazici & Tasmektepligil (2018), PWD can participate in sports. The study compared the QoL of amputees who play sports to those who are inactive. They found that amputees' QoL increases when depression lessens. Mahmoudi (2015) said OA's functional limitations and pain impact PWDs' quality of life. Activity constraints such as difficulty doing housework, walking, and climbing stairs reduce QOL. A 2015 study by Newitt, Barnett, and Crowe shows that participation restriction of people with orthopedic disabilities is influenced by physiologic, emotional, and psychological functions of the body as well as financial support and condition awareness, which affect their quality of life. This indicates that the perceived quality of life of people with disabilities is affected by physiologic, emotional, and psychological functions of the body as well as financial support and condition awareness. In conclusion, internal and external factors affect PWDs' quality of life, which affects or decreases their activity involvement. Therefore, there is a correlation between quality of life and activity participation.

V. CONCLUSION

This study was taken to ascertain the relationship of the quality of life and activity restriction of PWDs in using WHOQOL-BREF and IMPACT-S. There are 40 individuals that responded in the study. The study conducted by Biastro et.al (2015) furthermore strengthen and support this finding, stating that the more often that a person with an orthopedic disability participate in a social activity, the higher the level of perceived happiness, which is a factor considered in the overall score of quality of life of an individual. Lastly, looking into the disabilities domain, the result of the study shows that there is no correlation between the discrimination domain of quality of life and activity participation with a p-value of 0.649 and the autonomy domain and activity participation with the p-value of 0.401.

VI. RECOMMENDATIONS

To address the limitations of the study, the researchers recommend the following:

Because of the pandemic, the researchers were not able to fully administer the questionnaires to majority of the possible respondents. In the future, the researchers would like to recommend expanding the number of possible respondents with a medium or small effect size as well as stratifying a specific target location of residents. It is also research-worthy for future researchers to probe on the effects of the quality of life and limited activity participations among PWDs to their overall wellness and well-being. Also, to determine not only the correlation but also the predictive value of the quality of life with activity participation. The results gained from the study is valuable since the researchers have discovered that males experience more discrimination than women, and that women tends to participate less in doing activities. Thus, this can be used to raise awareness among the society and future researchers may explore on the reasons why men are more likely to experience such discrimination, and why women tend to be less participative in doing activities among the community.

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