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QUALITY-OF-LIFE OF ELDERLY NATIONAL HEALTH INSURANCE PARTICIPANTS WITH HYPERTENSION AND TYPE 2 DIABETES MELLITUS IN DENPASAR

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ABSTRACT

Elderly individuals are at a high risk of suffering from chronic diseases, especially hypertension and type 2 diabetes mellitus (DM type 2). Chronic diseases were often accompanied by multimorbidity and require long-term treatment. This led to a decline in the quality-of-life among the elderly. This research aimed to understand the quality-of-life among elderly individuals with hypertension and DM type 2 who are participants of BPJS Kesehatan and reside in the city of Denpasar. The study used a cross-sectional descriptive design, conducted from January to August 2023. A total of 49 elderly individuals (age ≥60 years) from 4 community health centers in Denpasar were selected as respondents using consecutive sampling. Data were collected through interviews using a questionnaire. The collected data included respondent characteristics and the level of quality-of-life based on the SF-36 questionnaire. Based on the data analysis, the majority of respondents sufferred from hypertension (51.0%) for a duration of 2-5 years (44.9%), with one accompanying disease (48.9%), mainly heart disease (48.9%). In terms of physical and mental aspects, elderly individuals with hypertension and/or DM type 2 had good quality-of-life. Individuals with hypertension/DM had better physical functional abilities compared to mental functional abilities, with poor social functioning. Conversely, elderly individuals with more than one chronic disease generally had a lower quality-of-life, with better mental functional abilities compared to physical functional abilities. Therefore, policymakers were encouraged to maintain efforts to improve the quality-of-life, such as through exercise or health promotion programs (Prolanis), and develop health programs focused on mitigating the impact of multimorbidity at both individual and community levels.

Keywords : quality-of-life, hypertension, diabetes mellitus.

INTRODUCTION

Aging was a process that occurs along life from birth.[1] According to the World Health Organization (WHO), the elderly was defined as individuals aged 60 years and over. Elderly was the final stage of the aging process which is characterized by decline in functional capabilities, sensitivity to life, as well as a decrease in the body's physiological functions.[2] The world's elderly population was projected to increase by 56% in 2030 and was predicted to reach 1,5 billion in 2050, which was twice as much as in 2015.[3] Therefore, the demographic increase in the elderly population had become an urgent issue in the medical, social, and economic fields, and had changed the global perspective to prioritize improving the quality of health services for the elderly. As the aging process continued, elderly individuals were more vulnerable to various health problems and diseases, such as infectious, degenerative, non-infectious, and chronic diseases.[4] Chronic diseases were defined by WHO as diseases that are long in duration, generally slow in progression, not contagious, and as a result from a combination of genetic, psychological, environmental, and behavioural factors.[2] It was one of the most common health problems identified in elderly individuals, especially diabetes mellitus (type 2 DM) and hypertension. In Bali Province, the percentage of type 2 DM patients in the 55-64 year age group reached 6,10% and hypertension in the age group over 75 years reached 29,70%.[5] Therefore, the prevalence of hypertension and type 2 DM was a significant contributor to the total prevalence of chronic diseases in the elderly. WHO defined quality-of-life as an individual's perception to life situations in the context of culture, value systems, and related to the goals and standards of society.[6] Health-related quality-of-life was a multidimensional indicator that measures individual's ability to function in life in terms of well-being in the health, physical, mental, and social aspects.[7] In the elderly, a decline in quality-of-life was prone to occur especially with the presence of chronic diseases. This was because chronic diseases require long-term treatment and cause various risks of disability, accelerated functional decline, as well as high health service costs.[8] Factors such as being female, unemployment due to decreased ability to work, having comorbidities, low levels of physical activities, and poor compliance with treatment were the main causes of poor quality-of-life in elderly people with chronic diseases.[9] In Bali Province, the focus of research on the quality-of-life of elderly individuals with chronic diseases was still limited in quantity and publication.

Existing studies reveals less than optimal levels of quality-of-life. A study by Putu (2018) found that the majority of participants in the Prolanis program with uncontrolled blood sugar and blood pressure levels had a moderate quality-of-life score.[10] Another study conducted in Gianyar I Public Health Center, Gianyar District, also found that the proportion of hypertensive patients with poor quality-of-life reached 56,7%.[11] This raised substantial concerns due to the increasing prevalence of chronic diseases in the elderly over time has the potential to increase utilization of health programs and services. At Denpasar City, the number of elderly individuals accessing health services at health centers reached 53.830 in 2021, while this number increased to 84.671 in 2022.[12,13] Ideally the increase in utilization should be accompanied by efforts to evaluate the effectiveness of health services as the basis for objective measurement for health policy makers to determine whether the health programs implemented adequately meet the needs of the elderly with hypertension and/or type 2 DM..

METHODS

This research was a cross-sectional descriptive study conducted over eight months, from January 2023 – August 2023. The main objective of this study was to measure the quality-of-life of elderly individuals aged ≤60 years with hypertension and/or type-2 DM who are participants of the national health insurance (BPJS Kesehatan) program. The target population of this study consisted of elderly individuals with hypertension and/or type-2 DM aged 60 years or older in health centers in Denpasar City in 2023. Based on sample calculations, the minimum sample size obtained is 47 respondents. The sampling method in this study involved selecting one health center from each district in Denpasar city, then using consecutive sampling to choose elderly participants who met the criteria. The research sample included elderly individuals receiving treatment at four health centers who met the inclusion criteria, such as being residents of Denpasar City, aged ≤60 years, registered patients diagnosed with hypertension and/or type 2 DM based on health center data, and fully willing to participate in the study. Exclusion criteria for the saimple included elderly individuals with mental illness, inability to respond and communicate, as well as those with communication disorders such as deafness and muteness. From these criteria, 49 elderly individuals were identified as eligible research participants. Variables measured in this study include gender, duration of chronic illness, disease status, number of comorbidities, type of comorbidities, and the level of quality-of-life.

The instrument used in this study is the Short Form-36 (SF-36) quality-of-life questionnaire created based on the Medical Outcome Study, which assess the health conditions of the general population. SF-36 measured the level of quality-of-life through 8 dimensions that were divided into 2 components, namely the physical and mental components. The physical component reflected quality-of-life in terms of physical abilities and health, consisting of 4 dimensions: physical functioning, bodily pain, general health, and role limitations due to physical health. The mental components evaluated quality-of-life in terms of mental health and well-being, consisting of dimensions such as vitality, social functioning, emotional role, and mental health. Scores for each dimension ranged from 0 to 100, where scores approaching 100 indicate a higher level of quality-of-life.

The steps in measuring quality-of-life involved initial assessment using SF-36 questionnaire, obtaining scores for the 8 dimensions. Subsequently, the calculation of physical and mental component scores was performed by averaging the combined values of 4 dimensions in each component. All acquired scores were then compared to the normative mean of 50 ± 10. Scores above the normative value reflected a good quality-of-life. Conversely, scores below the normative value reflected a poor quality-of-life.

This study was conducted through face-to-face interviews at the elderly outpatient clinic in each health centers. Subsequently, the obtained data were analyzed descriptively using Microsoft Excel 2010, Statistical Package for the Social Sciences (SPSS), and Microsoft Word 2010. This research has obtained ethical clearance with reference number 1251/UN14.2.2.VII.14/LT/2023 from the Research Ethics Commission of the Faculty of Medicine, Udayana University/Prof.dr.I.G.N.G Ngoerah General Hospital on May 12, 2023.

RESULTS

Based on Table 1, the results of this study found that the majority of the samples were female, accounting for 32 respondents (65,3%). A total of 40 respondents were aged between 60-74 years (81,6%), with the majority having completed undergraduate education (32,7%). Additionally, the majority of respondents were married, totaling 38 respondents (77,6%).

Tabel 1. Characteristics of Elderly Individuals with Hypertension and/or Type 2 DM

Characteristics	N	Percentage (%)
Gender		
Male	17	34,7
Female	32	65,3
Age (years)		
60-74	40	81,6
74-90	9	18,4
>90	0	0
Education Level		
Primary	14	28,6
Middle School	4	8,2
High School	13	26,5
Undergaduate	16	32,7
Not pursuing Education	2	4,1
Martial Status		
Not Married	0	0
Married	38	77,6
Divorced	5	10,2
Widowed	6	12,2
Types of Chronic Diseases		
Hypertension		
Type 2 DM	25	51,0
Hypertension and Type 2 DM	14	28,6
	10	20,4
Duration of Chronic Illness (years)		
<1		
2-5	9	18,4
6-9	22	44,9
>10	12	24,5
	6	12,2
Hypertension Status		
Controlled		
(<140/90mmHg)	20	57,1
Not Controlled (>140mmHg)		
	15	42,9
Type 2 DM Status		
Controlled	15	60,0
(80-130mg/dL)		
Not Controlled (>130mg/dL)	10	40,0
Type of Commorbidity		
Visual Diseases		
Peripheral Nervous System Diseases	6	12,2
Cardivascular Diseases	0	0
Renal Diseases	7	14,3
Central Nervous System Diseases	3	6,1
Osteoporosis	1	2,0
Hearing Disability	1	2,0
COPD	2	4,0
Osteoarthritis	2	4,0
Gastritis	1	2,0
>1 Commorbidity	1	2,0
No Commorbidity	9	18,4
	16	32,7

The majority of respondents in this study were elderly individuals with hypertension, totaling 25 elderly individuals (51,0%). Most elderly individuals suffered from chronic diseases for 2-5 years, with 22 respondents (44,9%). In terms of disease status, the majority had controlled hypertension (57,1%) and controlled Type 2 DM (60,0%). Most respondents sufferred from one type of comorbidity (48,9%), with the most common comorbidity being cardiovascular diseases (14,3%).

Tabel 3. Quality-of-life Scores of Elderly Individuals with Hypertension and/or Type 2 DM Based on The Type of Chronic Diseases

Dimension	Hypertension	Type 2 DM	Hypertension and Type 2 DM
Physical Component Summary (PCS)	71,75 ± 16,13	73,88 ± 15,10	63,81 ± 20,51
Physical Functioning	80,40 ± 19,89	85,71 ± 21,64	68,50 ± 25,71
Bodily Pain	73,20 ± 23,68	74,10 ± 24,05	65,25 ± 28,44
General Health	69,40 ± 19,38	55,35 ± 22,05	61,50 ± 13,55
Physical Role	64,00 ± 40,88	80,35 ± 36,92	60,00 ± 51,64
Mental Component Summary (MCS)	68,55 ± 17,35	69,70 ± 16,25	69,22 ± 12,53
Social Functioning	44,50 ± 11,46	46,43 ± 9,07	47,50 ± 7,91
Vitality	70,80 ± 18,96	66,79 ± 21,08	71,00 ± 22,82
Mental Health	85,60 ± 18,44	82,29 ± 22,00	88,40 ± 9,13
Emotional Role	73,33 ± 40,82	83,33 ± 36,40	70,00 ± 48,30

Based on Table 3, it was found that almost all domains of quality-of-life are above the average normative values for all types of chronic diseases, except for the social functioning dimension, which was also the dimension with the lowest scores in all three types of chronic diseases. The dimension with the highest score for individuals with hypertension as well as hypertension and type 2 DM was mental

Tabel 2. Quality-of-Life Scores of the Elderly Based on the SF-36 Questionnaire

Dimension	Mean ± SD
Physical Component Summary (PCS)	70,74 ± 16,8
Physical Functioning	79,49 ± 22,03
Bodily Pain	71,84 ± 24,49
General Health	63,78 ± 19,80
Physical Role	67,86 ± 42,08
Mental Component Summary (MCS)	69,02 ± 15,87
Social Functioning	45,66 ±10,06
Vitality	69,69 ± 20,03
Mental Health	85,22 ± 17,93
Emotional Role	75,51 ± 40,70

Table 2 shows the quality-of-life scores of the elderly based on SF-36. This study found that almost all dimensions of quality-of-life were above the normative mean of 50 ± 10, except for the social functioning dimension, which was below the normative value. The dimension with the highest score was mental health and the dimension with the lowest score was social functioning. Health, while for individuals with type 2 DM only, it was physical functioning. This study also found that individuals with hypertension and type 2 DM had the lowest summary scores for the physical component, and individuals with hypertension had the lowest summary scores for the mental component.

DISCUSSION

From this study, it was found that the most common chronic diseases were hypertension, followed by type 2 DM, as well as hypertension and type 2 DM simultaneously. This is consistent with the data from Denpasar Health Profile in 2022, where the number of hypertension patients was higher, totaling 100.569 patients, compared to diabetes patients, numbering 14.444 patients.[14] However, research on the number of elderly patients suffering from both hypertension and type 2 DM simultaneously in the Bali Province was still very limited.[15]

Most respondents in this study suffered from chronic diseases for 2-5 years, with the majority having the status of controlled hypertension and controlled type 2 DM. This finding aligned with the results of a study on the

characteristics of elderly individuals with hypertension and type 2 DM in Palu City, Central Sulawesi Province, by Hamida et al, which indicated that 80,0% of elderly individuals with type 2 DM and 50,0% of elderly individuals with hypertension suffered from chronic diseases for more than 1 year.[16]

Furthermore, this research found that the number of elderly individuals with controlled hypertension and type 2 DM was higher than those with uncontrolled status. The number of individuals with controlled hypertension was 1,33 times higher than those with uncontrolled hypertension, and the number of individuals with controlled type 2 DM was 1,5 times higher than those with uncontrolled type 2 DM. The result of this study contrasted with a descriptive study at Gianyar I Health Center by Rossyana (2018), where the number of elderly individuals with uncontrolled hypertension was twice as high as those with controlled hypertension, and the number of elderly individuals with uncontrolled type 2 DM was 0,2 times higher than those with controlled type 2 DM.[11] This was suspected due to the duration of chronic disease suffered, which is mostly between 2-5 years. Duration of chronic diseases of >5 years tend to be associated with uncontrolled disease status, poor general condition, subjective complaints, and ultimately a poorer quality-of-life. Thus, the predominant findings of this study, which found the majority of duration of chronic diseases to be <5 years, may be a supporting factor for the high number of respondents with controlled hypertension and type 2 DM.

This study found that the majority of elderly individuals with hypertension and/or type 2 DM in this research sufferred from one comorbidity. This was inconsistent with a meta-analysis study in Indonesia by Anorital, which found that the highest prevalence was in elderly individuals with chronic diseases without complications, accounting for 34,80%, followed by those with one complicating disease (28,0%) and two or more complications (24,2%).[17]

The aging process caused individuals with chronic diseases to experience degeneration in physical, cognitive, and psychomotor functions, resulting in a decline in a overall health. This was due to the long-term treatment needs of chronic diseases, which led to increased healthcare costs and a decrease in the quality-of-life, especially in terms of physical and mental capacity.[8,18] This study indicated that both physical and mental summary scores were above the normative values for all respondent groups, indicating the ability of the elderly to function well both physically and mentally. In individuals with hypertension or type 2 DM, the physical summary score was higher than the mental summary score. When compared with a study by Sari et al., the physical summary socre in elderly individuals with type 2 DM was higher than the mental summary score.[19] Although both scores were above the normative values, this may indicate the potential for mental disturbances as one of the detrimental complications caused by chronic diseases. A study by Azam et al. found a prevalence of mental disorders caused by type 2 DM to be 19,3%, with depression being a vulnerable comorbidity experienced by type 2 DM patients.[20]

However, the lower mental summary score compared to the physical summary score may be attributed by the social functioning dimension score, in which it was found to be below the normative value. The social functioning dimension measured the impact of physical health and emotional disturbances on social activities. This finding contradicted the results of a study by Tinartayu & Riyanto, which identified social functioning as the dimension with the highest score.[21] This was suspected to be caused by various factors, such as the presence of psychological pressure that may arise due to adjustments in functional capacity, social or economic stressors, educational level, or marital status.[22]

In individuals with concurring hypertension and type 2 DM, the results of quality-of-life level contrasted with findings of individuals with single chronic disease, where the mental summary score was higher than physical summary score. Thus, there was a suspected potential for a more rapid decline in physical abilities in elderly suffering from more than one chronic disease compared to elderly individuals with a single chronic disease. These findings aligned with a meta-analysis study by Makovski et al., which found higher mental summary scores compared to physical summary scores in elderly patients with multimorbidity. The presence of more than one chronic disease was associated with worse physical and mental abiltiies, as well as a lower quality-of-life. This may be because multimorbidity often occurred in older individuals and impacted a significant decline in physical conditions. However, the higher mental summary score could also be attributed to social stigma related to mental disorders in society, which led to an insufficient representation of mental deterioriation due to the use of questionnaires as a research instrument.[23]

Reviewing the research results, which indicated that the majority of respondents sufferred from controlled hypertension and/or type 2 DM with both physical and mental components above the normative values, it can be concluded that current health programs and services were effective in maintaining quality-of-life levels. While good mental functional ability was accompanied by poor social functioning, health programs need to make efforts to enhance social activities for the elderly, such as through conseling or regular support group activities. On the other hand, the research results also stated that elderly individuals with multimorbidity had lower physical functional ability compared to those with single chronic disease. Therefore, policymakers and health programs should also emphasize efforts to improve the quality-of-life for elderly individuals with multimorbidity, such as increasing participation in regular exercise activities.

The weakness of this study lied in the limited number of samples willing to be interviewed and some elderly individuals were influenced by family caregivers in answering questions. This may introduce bias to the research and impact the results.

CONCLUSION AND SUGGESTIONS

Based on the research on Quality-of-Life of Elderly National Health Insurance Participants with Hypertension and Type 2 Diabetes Mellitus in Denpasar, Bali, it was found that the functional abilities in terms of physical and mental aspects of elderly individuals with hypertension and/or type 2 DM were in a good condition. In elderly individuals with hypertension or type 2 DM, physical abilities were better than mental abilities. This may be due to the deterioriation social functioning, suspected to be a result of psychological pressure experienced as an adaptation to physical, social, or economic stressors. However, the opposite occurred in elderly individuals with multimorbidity, where those with more than one chronic disease have better mental functional abilities compared to physical abilities.

The researcher could conduct further studies regarding the factors influencing the quality-of-life in individuals with chronic diseases. The hope was that this research served as a reference not only for future studies but also as an evaluation for policymakers to shift attention from curative-based health programs for single chronic disease to promotive and preventive health programs. This effort was projected to mitigate the impact of multimorbidity on individuals and society as a whole.

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CONFLICT OF INTEREST

The researcher affirms the absence of any conflicts of interest related to the initiation and dissemination of this research. From the inception of the study to the publication of its findings, the research has been carried out with the highest level of integrity and transparency. The researcher confirms the absence of any financial, personal, or professional associations that could potentially influence or comprimse the objectivity of the research.

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