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# The Quality of Life (QoL) of Young Adult Hypertension Patients Undergoing Treatment in Hospitals of Makassar City

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## ABSTRACT

The aim of the research was to find out the risks of physical activities, obesity, smoking habit, type D personality, anger expression, family support and treatment obedience on the quality of life of young adult hypertension patients in several hospitals of Makassar City. The research was a cohort retrospective study conducted in Dr. Wahidin Sudirohusodo Public Hospital, Pelamonia Hospital Level II, Labuang Baji Regional Public Hospital, and Ibnu Sina Hospital. The sample was selected using consecutive sampling technique consisting of 73 people.

The results of the research indicate that the significant risk factor affecting the quality of life of young adult hypertension patients are physical activities (RR = 2.349; 95% CI : 1.382-3.991), obesity (RR = 1.942; 95% CI : 1.222-3.055), type D personality (RR = 2.782; 95% CI : 1.647-4.699), anger in (RR = 2.464; 95% CI : 1.382-4.395), anger control (RR = 1.920; 95% CI : 1.203-3.063), family support (RR = 2.920; 95% CI : 1.773-4.809) and treatment obedience (RR = 4.047; 95% CI : 1.770-9.249), while the insignificant risk factors are anger out (RR = 1.226; 95% CI : 0.644-2.333) and smoking habit (RR = 1.433; 95% CI : 0.883-2.326). The result of logistic regression analysis indicates that obesity is the most risk factor to the quality of life of young adult hypertension patients with RR 5.292 (95% CI: 1.117-23.804).

## CCS Concepts

•Social and professional topics → User characteristics

## Keywords

Hypertension; young adult; life quality; SF-36

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## 1. INTRODUCTION

World Health Organization (WHO) data show that hypertension is estimated to cause 7.5 million deaths or 12.8% of total annual deaths. Someone is said to have hypertension if you have 140 mmHg systolic blood pressure and diastolic blood pressure 90 mmHg. The high mortality rate is caused by a major risk factor, ie an increase in blood pressure. Increased blood pressure of a person will increase the risk of stroke and coronary heart disease [1].

Hypertension generally starts at a young age, about 5-10% occurs at the age of 20-30 years [2]. The shift in the age-to-age age group known as the "baby boom generation" era will contribute to the increasing age group at risk in the next 10 or 20 years [3]. According Ferguson [4], young adulthood begins around the age of 18-22 years and ends at the age of 35 to 45 years.

Prevalence of hypertension in people aged 18 years and over years 2007 in Indonesia was 31.7% and in 2013 decreased to 25.8%. Although the number has decreased from the previous year, but the prevalence of hypertension in South Sulawesi is still relatively high [3]

The incidence of hypertension also increased from year to year in Makassar. The incidence of hypertension in 2012 amounted to

57,463 cases with 574 deaths (0.99%), then in 2013 increased to 60,898 cases with 445 deaths (0.73%) and in 2014 again increased to 64,051 cases with 310 deaths (0.48%) [5]

Hypertension is often referred to as a silent killer (silent killer). Some hypertensive risk factors are obesity, dyslipidemia, high intake of sodium, lifestyle (smoking and alcohol consumption), stress / emotional factors, age, gender, genetics and lack of potassium intake [6]. Similarly, the quality of life of hypertensive patients factors such as psychosocial factors, lifestyle behavior factors, family support and adherence to treatment of hypertensive patients greatly contributes to the quality of life of hypertensive patients [7].

In the risk factor of physical activity, H Ahmad Husain [8] work stated that people who do not do physical activity will be at risk 1.4 times affected by hypertension.

A cohort study by Sarna et al. [9] gave results that patients who smoked had lower HRQOL compared with patients who did not smoke or ex- smoked.

According Kaplan [10] obesity will increase the work of the heart and can cause blood pressure tends to rise. According to Rutledge and Hogan [11], the incidence of hypertension is strongly associated with psychological factors such as anxiety of personality, depression, anger, hostility and stress.

Son et al. [12] that type D personality also affects the quality of life of hypertensive patients with  $p < 0.001$ . Hu et al. [13] in his research mentions that family support improved adherence treatment in hypertensive patients. Research conducted by Khalifeh et al. [14] that the daily frequency of anti-hypertensive drugs can improve the quality of life of hypertensive patients with  $p < 0.001$ .

Patients with hypertension in the City of Makassar mostly make visits and get treatment at the hospital. There are some largest hospitals located in Makassar City which serve as a place to get treatment for the city of Makassar, especially for people with hypertension. The hospital is RSUP Wahidin Sudirohusodo, Tk II Pelamonia Hospital, Labuang Baji Hospital and Ibnu Sina Hospital.

Several studies have shown that the quality of life of hypertensive patients undergoing treatment is strongly influenced by several factors, but research on the quality of life of hypertensive patients using retrospective cohort methods is lacking, so the study is intended to look at the risks of factors such as physical activity, obesity, type D personality, anger expression, family support and adherence to the quality of life of hypertensive patients of young adult age who underwent treatment at several hospitals in Makassar City.

## 2. METHODOLOGY

### 2.1 Research Design

The type of research used in this study was analytic observational with retrospective cohort design or historical cohort ie exposed group and unexposed group came from the same register. The cohort study is a study used to study the dynamics of correlation between risk factors and effects through a forward or prospective longitudinal approach. That is, risk factors to be studied are identified first and then followed prospectively in the future of the effect, ie disease or one indicator of health status. Data collection was done retrospectively. In other words, cohort studies are retrospective if exposure has taken place before researchers begin their research [15]. For this work, the researchers traced the factors of exposure in hypertensive patients of young adult age ie physical activity, obesity, smoking habit, personality type D, anger expression, family support and treatment compliance that is so identified the positive and negative exposure factor.

### 2.1 Location and Time of Study

This research was conducted from February to May 2016 in several public and private hospitals in Makassar City, Dr. Wahidin Sudirohusodo, TK II Pelamonia Hospital of Labuang Baji and Ibnu Sina Hospital. The consideration of the selection of research sites in the four hospitals is because the four hospitals are the largest hospitals located in Makassar City and access either private vehicles or public transport can be reached by the public to the hospital and represent some specific locations in the city of Makassar.

## 2.3 Population and Sample

The population in this study were all hypertensive patients who underwent treatment and recorded in the medical record section of Dr. Wahidin Sudirohusodo Central General Hospital, TK II Pelamonia Hospital, Labuang Baji Hospital and Ibnu Sina Hospital from October to December 2015 Sampling Method. The sample in this research is hypertension patient who undergoing treatment and recorded in the medical record section of Dr. Wahidin Sudirohusodo Central General Hospital, TK II Pelamonia Hospital, Labuang Baji Hospital and Ibnu Sina Hospital from October to December 2015. Then the sample size used in this research as many as 73 people

## 2.4 Data Collection Method

Primary data, ie data obtained through interviews of respondents. Secondary data, ie data obtained from medical records at the Central General Hospital Dr. Wahidin Sudirohusodo, TK II Pelamonia Hospital RS Labuang Baji and Ibnu Sina Hospital.

## 2.5 Data Analysis

Data is processed and analyzed with the SPSS version 21. Bivariate analysis was performed to determine the significance of dependent variable relationship (quality of life and blood pressure) and independent (physical activity, obesity, smoking habit, D type personality, anger expression, family support and medication adherence). The size of the association used is Relative Risk (RR), ie the proportion ratio of exposed groups to the proportion of unexposed groups. Furthermore, multivariate analysis is done to see the correlation between one dependent variable with all independent variables, so it can be known that the most dominant independent variable is related to the quality of life by performing Logistic Regression test.

## 3. RESULT AND DISCUSSION

### 3.1 Bivariate Analysis

Bivariate analysis was conducted to find out how much risk factor of independent variable (physical activity, obesity, smoking habit, D type personality, anger expression, family support and medication adherence) to dependent variable (quality of life). The result of bivariate analysis in the form of cross tabulation result among those variables can be described as follows.

#### 3.1.1 Risk of Physical Activity on Patient's Quality of Life Hypertension of Young Adult Age

**Table 1. Risk of Physical Activity on Quality of Life Respondents in several Makassar City Hospital Year 2016**

Physical Activity	Quality of Life				Total		RR 95% CI (LL- UL)
	Bad		Good		n	%	
	n	%	n	%			
Low	22	68.8	10	31.2	32	100	2.349
High	12	29.3	29	70.7	41	100	(1.382- 3.991)

The risk of physical activity of respondents before suffering from hypertension on quality of life by using the relative risk test (RR) can be seen in table 1. Results showed that of 73 samples studied, there were 22 respondents (68.8%) who did low physical activity category (positive exposure) before suffering from hypertension with poor quality of life and 12 respondents (29.3%) who did high physical activity (negative exposure). Based on statistical test results using RR, it is known that low physical activity is a risk factor to the quality of life of hypertensive patients young adult age with  $RR = 2,349$  (95% CI: 1,382-3,991). This means that

respondents who perform low physical activity have a 2.349 times greater risk of having poor quality of life compared with those who do high physical activity.

**3.1.2 Risk of Obesity to the Quality of Life of Hypertensive Patients Young Adult Age**

The risk of obesity of respondents before suffering from hypertension on quality of life by using the relative risk test (RR) can be seen in table 2. Results from Table 2 shows that of 73 samples studied, there were 16 respondents (69.6%) who had a history of obesity before suffering from hypertension (positive exposure) with poor quality of life and 18 respondents (36.0%) who had no history of obesity (negative exposure). Based on the results of statistical tests using RR, it is known that obesity is a risk factor to the quality of life of hypertensive patients young adult age with RR = 1.932 (95% CI: 1,222-3,055). This means that respondents who had a history of obesity before suffering from hypertension had a 1.932 times greater risk of having poorer quality of life compared with those without a history of obesity

**Table 2. The Risk of Obesity to the Respondent's Quality of Life in several Makassar City Hospital 2016**

Obesity	Quality of Life				Total		RR 95% CI (LL- UL)
	Bad		Good		n	%	
	n	%	n	%			
With History	16	69.6	7	30.4	23	10	1.932(1.222-3.055)
Without History	18	36.0	32	64.0	50	10	

**3.1.3 Smoking Risk to Patient's Quality of Life Hypertension of Young Adult Age**

**Table 3. The Risk of Smoking Habit to Quality of Life Respondents in several Makassar City Hospital Year 2016**

Smoking Habit	Quality of Life				Total		RR 95% CI (LL- UL)
	Bad		Good		n	%	
	n	%	n	%			
Smoker	1	56.7	1	43.3	3	10	1.433(0.883-2.326)
Non Smoker	7	39.5	6	60.5	13	10	

The high risk of smoking habit before the respondent suffers from hypertension on quality of life by using the relative risk test (RR) can be seen in table 3. Results from Table 3 shows that of 73 samples studied, there were 17 respondents (56.7%) who had smoking habit before suffering from hypertension (positive exposure) with poor quality of life and 17 respondents (39.5%) who did not have smoking habit (negative exposure). Based on statistical test results using RR, it is known that smoking habit is a risk factor to the quality of life of hypertensive patient of young adult age with value RR = 1,433 (95% CI: 0,883-2,326), but not related significantly due to lower limit and upper limit (LL-UL) includes a value of 1. This means that respondents who have a smoking habit before suffering from hypertension in this case are positively exposed to have a risk of 1,932 times greater have poor quality of life but not significantly related.

**3.1.4 Type D Personality Risk for Patient's Quality of Life Hypertension of Young Adult Age**

The risk of personality type D on the quality of life of respondents by using the relative risk test (RR) can be seen in table 4. Results from Table 4 shows that of the 73 samples studied, there were 22 respondents (75.9%) who had type D personality (positive exposure) with poor quality of life and 12 respondents (27.3%) who did not belong to personality type D (exposure negative). Based on statistical test results using RR, it is known that personality type D is a risk factor to the quality of life of hypertensive patient of young adult age with value RR = 2,782 (95% CI: 1,647-4,699). This means that respondents who have a Type D personality have a 2.782 times greater risk to have a poor quality of life compared to a personality not a D type.

**Table 4 Type D Personality Risks to Quality of Life Respondents in several Makassar City Hospital Year 2016**

Personality Type D	Quality of Life				Total		RR 95% CI (LL- UL)
	Bad		Good		n	%	
	n	%	n	%			
Type D	22	75.9	7	24.1	29	100	2.783(1.647-4.699)
Not Type D	12	27.3	32	72.7	44	100	

**3.1.5 Anger Expression Risk on Patient's Quality of Life Hypertension of Young Adult Age**

The great risk of anger expression on the quality of life of respondents by using the relative risk test (RR) can be seen in table 5. Results from Table 5 shows that of the 73 samples studied, there were 24 respondents (66.7%) who had high anger in (poor exposure) with poor quality of life and 10 respondents (27.0%) who had low anger in (negative exposure). Based on the results of statistical tests note that anger in is a risk factor on the quality of life of hypertensive patients young adult age with a value of RR = 2.464 (95% CI: 1,384-4,395). This means that respondents who have anger expression anger in high category have a risk 2.464 times greater to have a poor quality of life compared with low anger in.

Anger expression anger out category there are 5 respondents (55,6%) who have high anger out (positive exposure) with poor quality of life and 29 respondents (45,3%) who have low anger out (negative exposure). Based on the results of statistical tests note that anger out is a risk factor on the quality of life of hypertensive patients young adult age with RR value = 1.226 (95% CI: 0.644-2.333), but not significantly related because the lower limit and upper limit (LL-UL) values include 1. This means that respondents who have anger-expression anger-out category have a risk of 1,226 times more great to have a poor quality of life but not significantly related.

Anger expression anger control category there are 17 respondents (68,0%) who have low anger control (positive exposure) with poor quality of life and 17 respondents (35,4%) who have high anger control (negative exposure). Based on the results of statistical tests it is known that low anger control is a risk factor on the quality of life of hypertensive patients young adult age with a value of RR = 1.920 (95% CI:1,203-3,063). This means that respondents who have low anger control anger expression have a 1.920 times greater risk of having a poor quality of life than those with high anger control.

**Table 5. The Risk of Anger Expression to Quality of Life Respondents in several Makassar City Hospital Year 2016**

Anger Expression	Quality of Life				Total		RR 95% CI (LL-UL)
	Bad		Good		n	%	
	n	%	n	%			
Anger In							
High	24	66.7	12	33.3	36	100	2.464
Low	10	27.0	27	73.0	37	100	(1.384 - 4.395)
Anger Out							
High	5	55.6	4	44.4	9	100	1.226(0.644
Low	29	45.3	35	54.7	64	100	- 2.333)
Anger Control							
Low	17	68.0	8	32.0	25	100	1.920
High	17	35.4	31	64.4	48	100	(1.203 - 30063)

**3.1.6 Risk of Family Support to Patient's Quality of Life Hypertension of Young Adult Age**

The risk of family support to the quality of life of respondents by using the relative risk test (RR) can be seen in table 6. Results in Table 6 shows that of the 73 samples studied, there were 21 respondents (80.8%) who did not receive family support (positive exposure) with poor quality of life and 13 respondents (27.7%) who received family support (negative exposure). Based on the results of statistical tests it is known that the absence of family support is a risk factor on the quality of life of hypertensive patients young adult age with a value of RR = 2.920 (CI 95%: 1,773-4,809). This means that respondents who did not get family support had a 2.920 times greater risk of having a poor quality of life than those who had family support.

**Table 6. Risk of Family Support to Quality of Life Respondents in several Makassar City Hospital Year 2016**

Family Support	Quality of Life				Total		RR 95% CI (LL-UL)
	Bad		Good		n	%	
	n	%	n	%			
No	21	80.8	5	19.2	26	100	2.920(1.773-4.809)
Yes	13	27.7	34	72.3	47	100	

**3.1.7 Compliance Risk Treatment for Patient's Quality of Life Hypertension of Young Adult Age**

The risk of compliance to the quality of life of respondents by using the relative risk test (RR) can be seen in table 7. Results in Table 7 shows that of the 73 samples studied, there were 29 respondents (67.4%) who did not adhere to treatment (positive exposure) with poor quality of life and 5 respondents (16.7%) who were obedient to treatment (negative exposure). Based on the result of statistical test, it is known that non-adherence to treatment is a risk factor to the quality of life of hypertensive patients of young adult age with RR = 4,047 (95% CI: 1,770-9,249). This means that respondents are not obedient treatment has a risk 4,047 times greater to have a poor quality of life compared with those who obedient treatment.

**Table 7 Major Risk of Compliance in Medication for Quality of Life Respondents in several Makassar City Hospital Year 2016**

Compliance to Treatment	Quality of Life				Total		RR 95% CI (LL-UL)
	Bad		Good		n	%	
	n	%	n	%			
No	29	67.4	14	32.6	43	100	4.047(1.77
Yes	5	16.7	25	83.3	30	100	3- 4.809)

To facilitate the multivariate analysis, a summary of the results of bivariate analysis of research variables as given in Table 8. Results in Table 8 shows that there are only 1 (one) variable that is not included in multivariate analysis that is anger out variable because the value of p value is > 0.25 and other variables are physical activity, obesity, smoking habit, D type personality, anger in, anger control, family support and treatment compliance will be further analyzed in multivariate analysis.

**Table 8. Summary of Results of Bivariate Analysis**

No	Variable	RR	p Value
1	Physical Activity	2.349	0.002
2	Obesity	1.932	0.016
3	Smoking Habit	1.433	0.228
4	Personality Type D	2.728	0.000
5	Anger In	2.464	0.02
6	Anger Out	1.226	0.725
7	Anger Control	1.920	0.016
8	Family Support	2.920	0.000
9	Compliance To Treatment	4.047	0.000

**3.3 Multivariate Analysis**

Multivariate analysis was performed to identify the factors most at risk to quality of life of hypertensive patients of young adulthood. Variables included in this multivariate analysis are variables that have value p value <0.25. Table 9 shows that the variable most at risk to the quality of life of hypertensive patients of young adult age is obese variable with RR = 5,292 (95% CI: 1,177-23,804). The value of statistical test showed that obesity variable significantly risk to quality of life of hypertension patient of young adult age 5.292 times.

**Table 9. Summary of Results of Multivariate Analysis**

Variable	B	Wald	Sig.	RR	95 % CI	
					LL	UL
Obesity	1.666	4.717	0.030	5.292	1.177	23.804
Anger In	1.586	5.041	0.025	4.882	1.223	19.486
Anger Control	1.563	4.560	0.033	4.775	1.137	20.048
Family Support	1.502	3.840	0.055	4.490	1.000	20.168
Compliance To Treatment	1.502	4.361	0.037	4.490	1.097	18.384
Constant	-4.407	13.120	0.000	0.012	-	-

Based on the results of the analysis, it can be made a logistic equation for the quality of life of hypertensive patients young adult age. The interpretation of the quality of life logistics equation is in a condition where there is no influence of obesity, anger in, anger control, medication compliance and support of the family, and by paying attention to the negative constant value without any influence of these risk factors, the risk of quality of life of the patient hypertension of young adult age to be bad will decrease by 4,407 times. However, if taking into account the value of constants with the effect of adding these risk factors, then the risk of hypertensive patients of young adult age to have poor quality of life will also increase. For example, to increase the value of obesity history by 1 then it will increase the risk of poor quality of life of hypertensive patients young adult as much as 1.666 times. Likewise with other risk factors. The results of these values when added to the constant value will show a straight comparison of the greater the value of the independent variable, the greater the risk of hypertensive patients young adult age to have a poor quality of life. The resulting value of the equation is 3.412 indicates that the more risk factors a person has such as having a history of obesity, high anger in, low anger control, lack of family support and disobedient treatment will be the greater the risk to have a hasty quality of life. The probability value of hypertensive patients of young adult age with obesity, high anger in, low control anger, non-adherence to treatment and no family support have poor quality of life in some Makassar city hospitals by 2016 is 0.96 or 96%. This means that hypertensive patients young adult age with obesity, anger in high, low control anger, disobedient treatment and lack of family support has a probability of associating with poor quality of life for hypertensive sufferers of young adult age of 96%.

### 3.4 Overall Discussion

This is in line with the retrospective cohort study study conducted by Cegla et al [15] which states that the quality of life of hypertensive patients is significantly better in those with high physical activity or active physical activity than those who do not perform physical activity.

The results of this study are in line with a study conducted by Glinianowich et al [16] in 11,494 hypertensive patients who resulted that obesity has a negative effect on blood pressure control, obesity also affects the quality of life of hypertensive patients with worse quality of life of obese hypertensive women compared with obese men.

The results of this study are in line with research conducted by Son et al.[12] in South Korea who obtained the result that D type personalities affect the quality of life of hypertensive patients. Similarly, the study of Mols, [17] which states that the comparison of respondents with type D and not D type personality who have poor quality of life is 64%: 36%.

The results of this study for anger out and anger control variables are in line with the research of Julkunen et al [18] which is a cohort study which states that anger control is positively correlated to the quality of life of hypertensive patients while anger in and anger out are negatively correlated.

This is in line with research conducted by Hu et al. [13] stating that family support is associated with adherence to treatment of hypertensive patients with improved quality of life. Similarly, a study conducted by Sazlina et al [19] that obtained results that social support in which there is family support affect the quality of life of patients with non-communicable diseases with OR 2.17 95% CI 1.63-4.51 .

In addition, Ramanath et al [20] study states that there is a correlation between treatment performed with the quality of life of hypertensive patients with a value of  $p$  0.001.

## 4. CONCLUSION

The aim of the research was to find out the risks of physical activities, obesity, smoking habit, type D personality, anger expression, family support and treatment obedience on the quality of life of young adult hypertension patients in several hospitals of Makassar City. Thus based on the work done in this study, it can be concluded that logistic regression analysis indicates that obesity is the most risking factor to the quality of life of young adult hypertension patients with RR 5.292 (95% CI: 1.117-23.804).

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