

Effect of FatSecret App Implementation on Increased Physical Activity and Weight Loss

Siyam Rubiyanti¹, Cerika Rismayanthi²

^{1,2}Faculty of Sport and Health Sciences, Yogyakarta State University

ABSTRACT: This study aims to (1) determine the effect of applying the FatSecret application on increasing physical activity (2) determine the effect of applying the FatSecret application on weight loss.

This research method is an experimental method (quazi experiment) using a one group pre-test and post-test design, ie: experiments carried out on one group only without a comparison group that is given treatment. The sample in this study amounted to 24 people selected using purposive sampling. The sampling criteria in this study are (1) aged 18-65 years, (2) able-bodied, (3) BMI 25-49.9m kg/m² (4) interested in losing weight, (5) have access to smart phones. Data collection instruments used the GPAQ questionnaire, digital scales, measuring tape and FatSecret application. The normality test used the Kolmogorov-smirnov test. Data analysis techniques using SPSS.25 to determine the effect of FatSecret application on increasing physical activity and weight loss using t-test.

The results showed that (1) from the t test analysis, the t value was obtained ($-12.231 > t$ table (2.068), with these results it was concluded that there was an effect of applying the FatSecret application on weight loss. (2) the results of the t test analysis on physical activity obtained the value of t count (2.643) $> t$ table (2.068), from these results it can be concluded that there is an effect of applying the FatSecret application on increasing physical activity.

KEYWORDS: Physical Activity, FatSecret App, Weight Loss

I. INTRODUCTION

A common cause of death is non-communicable diseases related to daily activities. According to the World Health Organization, 74% of global deaths per year (41 million) are caused by non-communicable diseases (WHO, 2020: 1). The development of non-communicable diseases causes long-term pain and suffering for patients and their families (Kuper, 2019). Genetic factors also influence non-communicable diseases although in smaller amounts.

To improve public health, healthy living behaviors are needed. This healthy behavior needs to be improved through education about health maintenance and the welfare of individuals and communities. The influence of healthy living behavior is decisive in addition to genetics, social circumstances, health care and social factors (Currie *et al.*, 2012).

Physical activity is a form of body movement produced by skeletal muscles that results in considerable energy expenditure and is divided into light, medium and heavy groups. Each activity requires a different amount of energy depending on the length of intensity and muscle work (FKM-UI, 2007). According to WHO estimates, body weight and physical activity are closely related to various chronic diseases and are generally the cause of death globally (WHO, 2010: 1). WHO recommends moderate or high intensity physical activity of at least 60 minutes per day in children, and adolescents or at least 150 minutes per week in adults.

Strong scientific evidence suggests that physical activity is beneficial in preventing chronic diseases. Regular physical activity or physical exercise is not only the key to achieving optimal health but is considered a medicine that cannot be replaced by any pill or supplement. Diet is one of the fundamental pillars for optimal health and well-being and can also serve as medicine for good health if it is well planned and balanced.

An unbalanced and uncontrolled diet will lead to obesity. Obesity affects millions of adults worldwide and the number is increasing (Safaei *et al.*, 2021). According to WHO (2018) that overweight and obesity as a health problem and a threat to well-being.

Based on the results of basic health research or Riskesdas (Kemenkes RI, 2018), the obesity rate in adults in Indonesia increased to 21.8%. This prevalence increased from the 2013 Riskesdas results which showed that obesity in Indonesia only reached 14.8%. Obesity itself refers to a condition where the body mass index is above 27. Similarly, the prevalence of overweight, with a body

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mass index between 25 and 27, increased from 11.5% in 2013 to 13.6% in 2018. The condition of increasing obesity rates in Indonesia can be suppressed by public awareness in carrying out the healthy living movement through exercise as an important necessity. This sport serves to maintain the health and physical fitness of the body and improve physical appearance to look attractive and more confident.

Research shows that obesity is an inherited disease that is highly dependent on lifestyle patterns, including lack of regular physical activity and overeating (Safaei *et al.*, 2021). Weight loss programs require full commitment and effort from the individual concerned. The rapid development of information technology also affects efforts to improve weight loss programs with smartphone-based applications. Counseling and weight loss programs are successfully carried out through digital health technology with smartphone applications (Turner-McGrievy *et al.*, 2019).

Based on research, mobile apps help users to adhere to self-monitoring and weight loss goals better than traditional pen and paper methods and other mobile health interventions (web-based or PDA) (Carter *et al.*, 2013). According to (Mateo *et al.*, 2015), conducted the first meta-analysis focusing on mobile apps and found a weight loss of -1.04kg (95% CI -1.75 to -0.34kg = 41%) among mobile app users. Most interventions were conducted through smartphone apps in combination with other non-mobile behavioral interventions, but it is unclear whether the effect of apps on weight loss was solely due to their use or the addition of a behavioral component.

One of the apps for weight loss is FatSecret which is a calorie counter app. The app provides information on the calories contained in the food the user consumes. This smart phone app also encourages self-monitoring by prompting the user to enter daily physical activity execution, calorie expenditure based on activity, and calories that need to be expended to achieve ideal weight loss. Weight loss can be enhanced by an increase in daily physical activity.

Yogyakarta State University education personnel based on sources from <http://pdpt.uny.ac.id/dttendik>, a total of 896 people spread across various units. From the author's observation, there are 10% of the education personnel of Yogyakarta State University who are overweight. Based on the author's observations, some of the education personnel of Yogyakarta State University have work patterns that are mostly carried out in a sitting position, so that the intensity of physical activity is less. Therefore, the author wants to know the effect of applying the FatSecret application on increasing physical activity and weight loss.

II. MATERIAL AND METHOD

The method used in this research is an experimental method (quasi experiment) using a research design of one group pre-test and post-test design, namely, experiments carried out in one group only without a comparison group that is given treatment. Pretest and posttest design is a technique to determine the impact before and after treatment. This study did not use a comparison class but had used an initial test, so that the magnitude of the effect or influence of the treatment could be known with certainty. The pretest data collection began on Monday and Tuesday, October 23-24, 2023, in the Yogyakarta State University environment. The study was conducted for 5 weeks with treatment carried out 16 times doing physical activity with a frequency of physical activity three times a week with an ideal duration of 30-60 minutes and recording daily calories on the FatSecret application. The post-test was conducted on November 27 and 28, 2023 by filling out the GPAQ questionnaire and measuring weight loss. The independent variable in this study is the application of FatSecret application, while the increase in physical activity and weight loss as the dependent variable. Data obtained from the initial test (pretest) and the final test (posttest) will be analyzed descriptively using the t test using the SPSS 25 computer program with a significance level of 5%. This t test aims to determine whether there is an effect of applying the FatSecret application on increasing physical activity and weight loss.

III. RESULT

The classification of Yogyakarta State University Education Personnel respondents based on age is presented in **Table 1** below.

Table 1. Classification of Respondents by Age

Age	Quantity	Percentage (%)
21 – 30	1	4,17
31 – 40	7	29,17
41 – 50	11	45,83
51 – 60	5	20,83
Total	24	100,0

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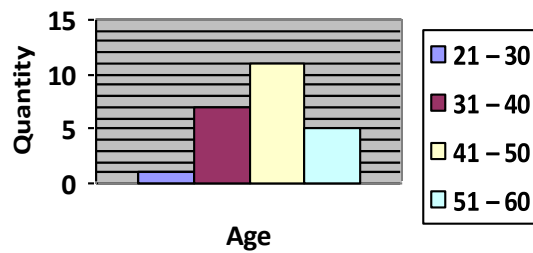


Figure 1. Classification of Respondents by Age

The classification of respondents of Yogyakarta State University Education Personnel based on gender can be seen in **Table 2** below.

Table 2. Classification of Respondents by Gender

Gender	Quantity	Percentage (%)
Female	12	50,0
Male	12	50,0
Total	24	100,0

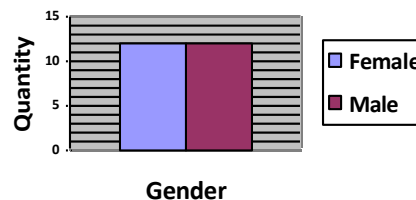


Figure 2. Classification of Respondents by Gender

The classification of respondents based on the occupation of Education Personnel of Universitas Negeri Yogyakarta is presented in **Table 3** below.

Table 3. Classification of Respondents by Occupation

Occupation	Quantity	Percentage (%)
Administration	10	41,7
Laboratory	3	12,5
Students	1	4,2
Librarian	8	33,3
Technician	2	8,3
Total	24	100,0

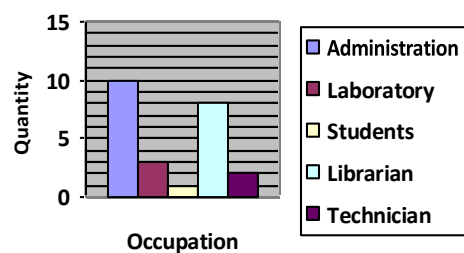


Figure 3. Classification of Respondents by Occupation

The classification of respondents based on the Education Work Unit of Universitas Negeri Yogyakarta is presented in **Table 4** below.

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Table 4. Classification of Respondents by Work Unit

Work Unit	Quantity	Percentage (%)
Direktorat Akademik, Kemahasiswaan dan Alumni (DAKA)	10	41,66
Direktorat Riset dan Pengabdian kepada Masyarakat (DRPM)	1	4,17
Fakultas Ilmu Sosial, Hukum, dan Politik (FISHIPOL)	1	4,17
Fakultas Matematika dan Ilmu Pengetahuan Alam (FMIPA)	11	45,83
Sekolah Pascasarjana (SPs)	1	4,17
Total	24	100,0

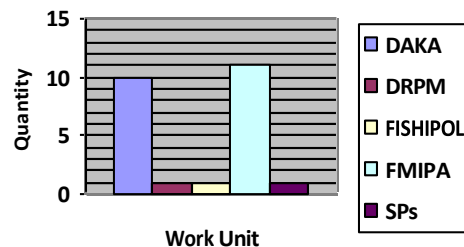


Figure 4. Classification of Respondents by Work Unit

The normality test in this study was used to determine whether a distribution was normal or not. The criteria used to determine whether a distribution is normal or not is if $p > 0.05$ (5%) the distribution is declared normal, and if $p < 0.05$ (5%) the distribution is said to be abnormal. The results of the normality test can be seen in **Table 5** below.

Table 5. Normality Test Results

Variable	Z	P	Sig 5 %	Description
Body Weight	1,881	0,069	0,05	Normal
Physical Activity (MET)	1,332	0,057	0,05	Normal

Based on the data in **Table 5**, it is known that the Yogyakarta State University Education Personnel obtained $p > 0.05$. The results can be concluded that the research data is normally distributed.

The homogeneity test is useful for testing the similarity of the sample, namely whether the sample variants taken from the population are uniform. Homogeneity criteria if $F \text{ count} < F \text{ Table}$ test is declared homogeneous if $F \text{ count} > F \text{ Table}$ test is said to be inhomogeneous. The results of the homogeneity test of this study can be seen in **Table 6** below.

Table 6. Homogeneity Test Results

Test	df	F Table	F hit	P	Description
Body Weight	1:46	4,05	3,390	0,072	Homogen
Physical Activity (MET)	1:46	4,05	0,170	0,682	Homogen

Based on the data in **Table 6**, the value of $F \text{ count} < F \text{ Table}$ (4.05) is obtained, with the results obtained it can be concluded that the variance is homogeneous.

The t test was conducted to determine the effect of applying the FatSecret application on increasing physical activity and weight loss. The results of the first hypothesis test can be seen in **Table 7** below.

Table 7. Results of the t-test

Pretest – posttest	df	t Table	t count	P	Sig 5 %
Body Weight	23	2,068	-12,231	0,005	0,05
Physical Activity	23	2,068	2,643	0,015	0,05

Based on the results of the t test analysis in **Table 7**, the weight loss data obtained t value (-12.231) $>$ t Table (2.068) and p value (0.005) $<$ from 0.05. The calculated t value is absolute so that these results state that there is an effect of applying the

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FatSecret application on weight loss. Based on the results of the t test analysis on physical activity, the t value (2.643) > t table (2.068) and p value (0.015) < from 0.05. The calculated t value is greater than the t table. This shows that there is an effect of applying the FatSecret application on increasing the physical activity of Yogyakarta State University Education Personnel.

IV. DISCUSSION

Regular physical activity or physical exercise is not only the key to achieving optimal health but is considered a medicine that cannot be replaced by any pill or supplement. Physical activity is also beneficial in preventing chronic diseases.

Lifestyles such as lack of physical activity can influence one's health condition. Physical activity is required to burn energy from the body. If energy intake is excessive and not balanced with physical activity, it will make it easier for a person to experience excessive fatigue. According to the WHO health agency, physical activity is the movement of limbs that causes energy expenditure which is very important for maintaining physical and mental health, as well as maintaining the quality of life to stay healthy and fit throughout the day (Rismayanthi, 2018).

Good physical activity can be done with good physical conditions as well, one of the characteristics of a good physique is ideal body weight. The problem faced by someone who is getting older is weight. This happens to some UNY education personnel. Excess weight can lead to obesity and disease. Therefore, this study intends to determine the effect of applying the FatSecret application on increasing physical activity and weight loss.

To increase physical activity in UNY Education Personnel, Social Cognitive Theory (SCT) is one of the recommended theories to be applied. SCT focuses on the reciprocal relationship between humans and their environment. SCT concepts include self-efficacy, outcome expectancy, and self-regulation. Self-efficacy in this context refers to confidence in maintaining physical activity despite barriers. Outcome expectancy in this context is defined as the expected benefits when performing physical activity activities. Finally, self-regulation refers to an individual's ability to maintain physical activity (e.g. by planning, scheduling, and goal setting). The results suggest that self-regulation is the most important socio-cognitive process that determines physical activity levels (Rahayu *et al.*, 2022). Therefore, improving self-regulation skills is essential to increase physical activity levels.

The results of the t test analysis in this study obtained the value of t count (12.231) > t Table (2.068). This shows that there is an effect of applying the FatSecret application on weight loss. Based on the results of the t test analysis on physical activity, the t value is obtained (2.643) > t Table (2.068). This shows that there is an effect of the FatSecret application on increasing the physical activity of Yogyakarta State University Education Personnel. Routine and regular physical activity will be one of the factors to reduce one's weight. This is because when the body does physical activity a lot of fat and sweat comes out, so it will reduce excess weight.

Overweight is a state of imbalance between body mass and body fat, where there is excessive fat accumulation in adipose tissue. This situation arises because of poor eating arrangements and a sedentary lifestyle (hypokinetic). Excess food intake consumed accumulatively will be stockpiled or stored as energy reserves in the form of body fat. The imbalance between the incoming energy and the energy released or used by the body is what causes weight gain, resulting in excess body weight (Yuniana, 2020).

The large number of weight loss apps available has led to the development of a variety and combination of features and behavior change techniques. One of the most common behaviors change techniques built into weight loss apps is the ability to self-monitor food intake, physical activity and/or weight (Breton, 2011). Self-monitoring is a key component of behavior-based weight loss programs, and this technique has been shown to significantly increase the effectiveness of an intervention (Michie, 2009). Smart phone apps can help reduce the burden associated with this important strategy (Tang, 2015). Daily weight or various aspects of physical activity including type, duration and intensity of exercise can be monitored manually on the app. Apps can also provide access to a comprehensive food database so that users do not need to search for nutritional information online or in separate books. Specific items and portion sizes of food consumed can be selected to automatically generate an estimate of the number of calories consumed.

To further simplify and reduce the time required to self-monitor food intake, some apps now include barcode scanning, use food category or portion entries rather than detailed item entries or require users to take photos of food (Carter, 2013).

V. CONCLUSIONS

Based on the research results, it shows that from the t test analysis, the calculated t value was obtained (-12.231) > t table (2.068), with these results it was concluded that there was an effect of implementing the FatSecret application on weight loss. The results of the t test analysis on physical activity obtained a calculated t value (2.643) > t table (2.068), from these results it can be concluded that there is an influence of implementing the FatSecret application on increasing physical activity.

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