

The Effect of Nutrition Counseling and REST™ Diet also Occupational Factors on Weight Loss among Hospitals Nurses with Excessive Weight Nutritional Status (Study in The Occupational Health Hospital of West Java Province)

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Abstract

Background: Nurse has a risk to get an excessive weight nutritional status that can increase the risk of serious health problems, such as heart disease, hypertension and diabetes mellitus. The intervention of nutrition counseling and diet are expected to lose weight in people with excessive weight nutritional status. This study aimed to determine the effectiveness of nutrition counseling and the implementation of Rendah Energi, Seimbang dan Teratur (REST) diet on weight loss among hospital nurses with excessive weight nutritional status in the hospital.

Methods: The study was conducted at Occupational Health Hospital of West Java with 22 nurses as study subjects with excessive weight nutritional status, implemented nutrition counseling intervention, a REST™ Diet and also used the Bouchard questionnaire, OSI-R™ questionnaire and food record sheets.

Results: The greatest average weight loss after receiving nutrition counseling and implementing a REST™ Diet occurred in the 12th week of the last observation. It was 2.6 kg with 95% CI=1.3-3.9 kg. Based on the bivariate test showed gender had a significant effect on the average weight loss. The male nurses had greater average weight loss than female nurses ($p=0.038$). The average weight loss of male nurses was 3.1 ± 1.7 kg and female nurses 1.6 ± 1.3 kg. Meanwhile, the effect of occupational factors on weight loss after receiving nutrition counseling and implementing the REST™ Diet did not show a significant effect, such as job position ($p=0.948$), the number of working hours ($p=0.220$), work shift schedule ($p=0.692$) and work stress ($p=0.813$).

Conclusions: There was an effect of nutrition counseling and REST™ Diet during 12 weeks on weight loss among the hospital nurses with excessive weight nutritional status in the hospital.

Keywords: nutrition counseling, REST™ diet, excessive weight nutritional status, hospital nurses

Abstrak

Latar belakang: Perawat berisiko mengalami kelebihan berat badan yang dapat meningkatkan risiko masalah Kesehatan serius seperti penyakit jantung, hipertensi dan diabetes. Intervensi konseling gizi dan diet diharapkan dapat menurunkan berat badan orang dengan kelebihan berat badan. Penelitian ini bertujuan mengetahui efektivitas konseling gizi dan penerapan diet Rendah Energi, Seimbang dan Teratur (REST) pada perawat di rumah sakit.

Metode: Penelitian ini dilakukan pada 22 perawat di Occupational Health Hospital di Jawa Barat of West Java dengan status gizi kelebihan berat badan. Intervensi dilakukan dalam bentuk konseling gizi, REST™ Diet dan identifikasi asupan dengan Bouchard questionnaire, OSI-R™ questionnaire dan food record sheets.

Hasil: Rerata penurunan berat badan tertinggi setelah konseling gizi dan penerapan REST™ Diet terjadi di minggu ke 12 observasi, dengan penurunan 2.6 kg [95% CI=1.3-3.9]. Analisis bivariat menunjukkan faktor jenis kelamin memberi hasil signifikan terhadap rerata penurunan berat badan. Perawat laki-laki menunjukkan rerata penurunan berat badan yang lebih besar disbanding perawat perempuan ($p=0.038$). Rerata penurunan berat badan perawat laki-laki 3.1 ± 1.7 kg and female nurses 1.6 ± 1.3 kg. Pengaruh faktor pekerjaan terhadap penurunan berat badan setelah mendapatkan intervensi konseling gizi dan REST™ Diet tidak bermakna.

Simpulan: Konseling gizi dan REST™ Diet selama 12 minggu dapat menurunkan berat badan perawat yang bekerja di rumah sakit dengan status kelebihan berat badan.

Kata kunci: konseling gizi, REST™ diet, kelebihan berat badan, perawat

Introduction

One of the professions in the scope of hospital activities is a nurse. It provides nursing services to patients according to their competence.¹ Nurse has a high risk of the growth of excessive nutritional status.² The prevalence of excessive weight nutritional status of nurses internationally ranges between 55% - 79%, although there is not any study comparing excessive weight nutritional status between nurses and other health professions.³

The weight loss to achieve an ideal weight also aims to reduce the risk of type 2 diabetes mellitus, improve the fat profile and reduce blood pressure. Almost all weight loss methods have results within 6 months (8-10 % loss of initial weight). According to the data of The National Weight Control Registry in the United States, as many as 4,800 people who lose an average of 13.6 kg can maintain this loss for at least 1 year.⁴ The efforts to lose weight in excessive weight nutritional status must be carried out comprehensively, including change in eating behavior as well as increasing body activity with educational and medical approaches.⁵ In 2017, there was research by Al-Nimr et al. in the UK. It shows that providing 12 weeks of intensive counseling can improve the quality of diet and weight loss.⁶ People with excessive weight nutritional status find that easier to reduce the amount of food than increase physical activity. The diet method principle in obese people is to reduce the number of calories and regulate the balance of macronutrient composition.⁷

A kind of diet to lose weight that is developed in Indonesia is REST™ diet. It was introduced by Rita Ramayulis in 2014 and her book "Slim is Easy, Cara Ajaib Menurunkan berat badan dengan Diet REST" has been published. That research with 120 diet participants occurred in 2008-2013 and by implementing the REST Diet, the weight could lose an average of 4.6 kg/ month.⁸ There are four principles for implementing the REST™ diet:⁸ low energy density, balanced nutrition, regular frequency and overcoming emotional eating.

The individual factors that are associated with weight loss are dietary adherence, physical activity, gender, age and treatment of certain diseases.^{9,10} In 2013 Chin et al. researched 394 nurses in California, United States. It has shown that occupational factors, such as job position, job status, the number of working hours, shift work system and job demands can affect physical activity and body mass index (BMI). Commonly, a

nurse with excessive weight and obesity status (BMI>25 kg/m²) are significantly in supervisors' nurse position (OR = 2.54, 95% CI: 1.16-5.59) and full-time nurses (OR = 2.18, 95 % CI: 1.29–3.70) or working 40 hours per week (OR = 2.53, 95% CI: 1.58–4.05).¹¹

Based on the result of the medical check-up (MCU) which was carried out within March 2020 for 56 nurses at the occupational health hospital of West Java Province, showed that as many as 59,64 % of nurses have an excessive weight nutritional status. As a new hospital that has not any heavy workload, the percentage of excessive weight nutritional status in occupational health hospital is too high.¹² Therefore, the researcher was interested in studying the success of weight loss by doing interventions on nutrition counseling and implementing a REST™ Diet. Also examining other factors for that intervention to the nurses who have excessive weight nutritional status in Occupational Health Hospital of West Java.

Methods

Study Design and Setting

The study design used is a one-group pre-post intervention design which is grouped in the pre-experimental study method. The study was conducted at Occupational Health Hospital of West Java for 12 weeks starting November 4th, 2021 to January 26th, 2022. The inclusion criteria were nurses who have excessive weight nutritional status and willingness to fully participate during this study and did not take any mweight loss drugs. The exclusion criteria were pregnant and breastfeeding nurses. The drop-out criteria were nurses who did not fill out the food record sheet for 2 weeks consecutively and a nurse within 12 weeks of this study was discovered as pregnant or withdrawn.

Measurements and Data Analysis

As the study preparation step, the facilities and infrastructure would be standardized, how to fill out the Bouchard questionnaire to assess physical activity, and the OSI-R™ questionnaire to assess work stress and food record sheets to assess calorie intake. The research subjects filled out food records for 2 working days and 1 off day which was filled out every 2 weeks.

At the beginning of the study, the subjects were given some directions about this study and filled out a consent form. Then, they filled in other data about identity, social demographics, and job characteristics. After that, carried out an anthropometric examination, and filled out the Bouchard questionnaire and the OSI-R™ questionnaire.

Nutrition counseling was carried out by 3 nutritionists. They already have a registration certificate that is issued by the Indonesian Medical Council and a work permit or medical practice. Before conducting counseling, researchers and nutritionists conducted a discussion about the counseling materials that must be conveyed to the study subjects. Each nutritionist performed nutrition counseling on the same study subject for 12 weeks.

As the initial Nutrition Counseling, the total calorie needs of each study subject were calculated and then reduced by 500 calories/day. It was used as a standard dietary with an exchange unit, then explained a REST™ Diet modification that must be carried out and the ways to regulate their eating habits. Every 2 weeks, the body weight was measured and nutrition counseling was conducted to monitor the implementation of a REST™ Diet among study subjects. So, within 12 weeks of study, nutrition counseling was carried out 6 times. The researcher has created a WhatsApp™ group which has the researcher, nutritionists and study subjects as members. At the end of the intervention, the final weight data was calculated, so, the weight loss of each study subject could be discovered.

The data from all examinations were collected, verified and processed manually using calculating machines and computers. The data was analyzed using Windows Program “Statistic Package for Social Science (SPSS) 25”. The collected data were cleaned, coded, tabulated and entered into the computer.

Study subjects who refused to continue their participation, even though they have signed an agreement, were released from the study without any fines or penalties. This study has passed the ethical test of the Health Study Ethics Commission, Faculty of Medicine, University of Indonesia (Number: KET-814/UN2.F1/ETIK/PPM.00.02/2022).

Results

In this study, the total number of study subjects was 22 people who have an average age of 35 years, dominated

by males (63.6%) and none of them have heavy physical activities. The occupational factor was dominated by non-supervisory nurses (77.3%) with more non-shift work schedules (59.1%), none of the study subjects had mild work stress, adhered to a REST™ Diet of 45.5% (during 12 weeks reduced 500 kcal of the calories needs), while 55.5% did not adhere (minimum 6 weeks reduced 500 kcal of the calories needs).

Table 2 shows that the average initial body weight before receiving nutrition counseling and being on a REST Diet was 79.1 ± 14.7 kg. The average weight loss which was the most significant occurred in the 12th week (at the end of the observation) at about 2.6 kg with IC=1.3-3.9 kg.

Table 1. Respondents distribution by sociodemographic and occupational characteristic

Variable	Descriptive
Age	35±8
Gender	
Male	14(63,6%)
Female	8(36,4%)
Marital Status	
Married/ Ever married	20 (90,9%)
Single	2 (9,1%)
Health Status	
Suffering Chronic Disease	2 (9,1%)
Non-Suffering Chronic Disease	20 (90,9%)
Physical Activity	
Light	11 (50,0 %)
Moderate	11 (50,0%)
Vigorous	0 (0%)
Job position	
Supervisory Nurse	5 (22,7%)
Non-supervisory Nurse	17 (77,3%)
Number of Working Hours	
≥40 hours/week	15 (68,2%)
<40 hours/week	7 (31,8%)
Work Schedule	
Shift	9 (40,9%)
Non-Shift	13 (59,1%)
Work Stress	
High	1 (4,5%)
Medium	21 (95,5%)
Mild	0 (0%)
REST Diet	
Adherent	10 (45,5%)

Table 2. The average weight loss after receiving nutrition counseling and doing a REST™ Diet within 12 weeks

Observation time	Body weight (kg), n=22		P-value
	Average± SD	The loss compared to initial weight average Average (95% CI)	
0 week (start)	79,1 ± 14,7		
2 nd week	78,9 ± 14,8	0,2 (-0,5 – 0,8)	1,000
4 th week	78,5 ± 14,5	0,7 (-0,4 – 1,7)	1,000
6 th week	78,0 ± 14,6	1,1 (0,1 – 2,2)	0,022*
8 th week	77,8 ± 14,2	1,3 (0,3 – 2,4)	0,004*
10 th week	77,4 ± 14,1	1,7 (0,7 – 2,7)	<0,001*
12 th (end)	76,5 ± 13,8	2,6 (1,3 – 3,9)	<0,001*

Note: SD: Standard Deviation, CI: Confidence Interval, p-value in Bonferroni test, *significant p<0.05

In figure 1, the average number of calorie intakes of study subjects after receiving Nutrition Counseling and doing the REST Diet every 2 weeks tended to be lower than the calorie needs during the diet.

Table 3 shows the subject who adhered to the REST™ Diet showed greater weight loss than subjects who did not adhere. It was statistical significance (p=0.022).

In figure 2, the scatterplot results show that there was a linear trend that the greater the reduction in calories, the greater the weight loss.

Table 4 shows the analysis result of the effect of individual and occupational factors on weight loss after receiving nutrition counseling and implementing a REST™ Diet on nurses who had excessive weight nutritional status at Occupational Health Hospital of West Java Province:

- Gender had a significant effect on weight loss (p=0.038)
- Individual factors did not have a significant effect on weight loss (p>0.05).
- There was not any significant effect of occupational factors on weight loss (p>0.05).

Discussion

Among twenty-four study subjects who were willing to participate in the nutrition counseling and Diet REST™ intervention, only 22 people were able to follow the intervention until the end. As result showed the average age of the participated nurses was 35 years. The most effective weight loss effort is for the aged 17-25 years.¹³ However, in this study, 21 study subjects are more than

25 years old. The oldest age is 54 years old, so the weight loss was more difficult to occur. This is in line with the Nazhif Ghifari research and this study succeeded to lose weight more than 1.6 kg.

Mostly, the participated nurses in this study were male (63.6 %) because the nurses with excessive weight nutritional status in this hospital are male nurses. This condition was not in line with the data that 30.29 % of nurses in Indonesia are male, although there is not any prevalence data of excessive weight nutritional status mostly occurred to males or females.¹⁴

Gender had a significant effect on weight loss (p=0.038), male nurses had a greater average weight loss than female nurses. This might be because this study was participated by more male nurses. These results were in line with the systematic review by Williams et al. who concluded that from their eleven studies that directly compared the weight loss between males and females, ten studies reported that males lost more weight than women.¹⁵

Mostly, about 90.9 % of study subjects are married. Married people tend not to care about their appearance and less care if their body gains overweight. So that someone married will find it is difficult to do a weight loss diet.¹⁶ This is in line with this study where marital status had not any effect on the average weight loss (p = 0.629).

About 90.9 % of the participated nurses did not suffer any chronic diseases (e.g., hypertension, diabetes, heart disease, cancer, hypothyroidism, polycystic ovary syndrome, prolactinoma, Cushing's syndrome). Those health statuses did not have a significant effect on the average weight loss (p=0.514). It showed that the average weight loss in this study occurred due to nutrition

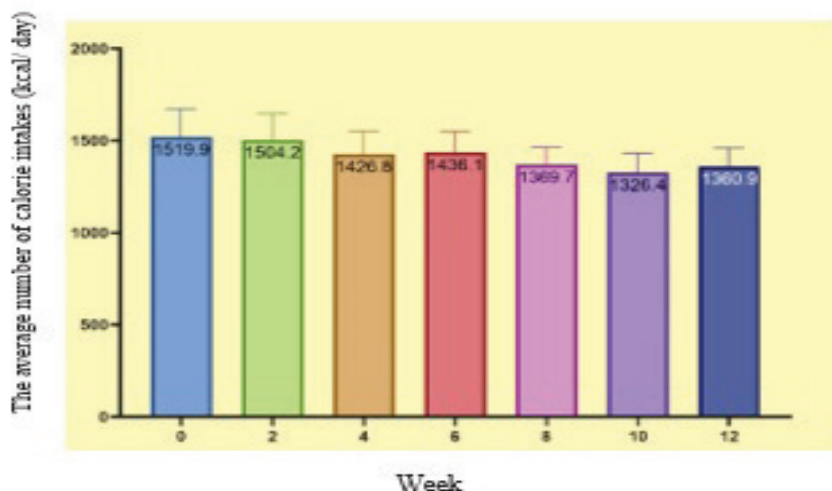


Figure 1. The bar chart of the average calorie loss per 2 weeks up to the 12th week after receiving nutrition counseling and following the REST™ Diet

Table 3. The adherence effect of joining nutrition counseling and following a REST™ Diet on weight loss

Variable	Weight Loss Average ± SD	p-value
REST Diet		
Adherent	3.5 ± 1.8	0.022 ^a
Non Adherent	1,8 ± 1,4	

Note: SD=Standard Deviation, p-value using *One ANOVA test*^d, significance <0,05

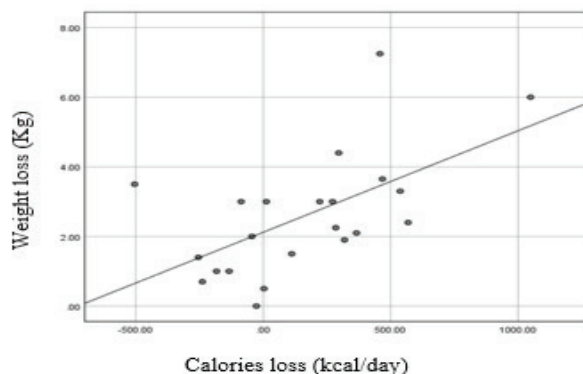


Figure 2. The Scatterplot of calories loss with weight loss

counseling and a REST™ Diet. It was not affected by the chronic disease because the mentioned diseases above can increase the weight of the sufferer.¹⁷

The percentage of nurses who perform light and moderate physical activity was equal to 50%, it is might occur due to the participation of nurses in some routine sports organized by the hospital such as gymnastics, badminton and futsal. In this study, physical activity did not have a significant effect on weight loss (p = 0.335). Said et al explained that a combination of diet and physical activity is needed to reduce weight and cholesterol and the results are more optimal.¹⁸

About 77.3% of non-supervisory nurses participated in this study. This condition describes the characteristic of the nursing population in the hospital. As theory said,

non-supervisory nurses will usually be more physically active due to the demands of their work to provide direct patient care.¹¹ In this study, job titles did not have any significant effect on weight loss (p = 0.948). This might occur because the non-supervisory nurses who work in this hospital have not done their workload optimally.

Related to the number of working hours, this study was followed by 15 nurses (68.2%) who worked ≥40 hours/week. As theory said, a worker who has moderate work activity for about 40 hours per week is found to have the greatest risk of getting an excessive nutritional status.¹⁹ The number of working hours did not have any significant effect on the average weight loss of the participated nurses (p = 0.22). This might occur due to the schedule that has been arranged properly to avoid

Table 4. The effect of individual and occupational factors on weight loss after receiving nutrition counseling and implementing a REST™ Diet

Individual/ Occupational Factors	n	Weight Loss Average ± SD	p-value
<u>Individual factors</u>			
Gender			
Male	14	3,1 ± 1,7	0,038*
Female	8	1,6 ± 1,3	
Marital Status			
Married	20	2,6 ± 1,8	0,629
Single	2	2,0 ± 1,4	
Health Status			
Suffering Chronic Disease	2	4,8 ± 3,5	0,514
Non-Suffering Chronic Disease	20	2,4 ± 1,5	
Physical Activity			
Light	11	3,0 ± 1,5	0,335
Moderate	11	2,2 ± 1,9	
<u>Occupational factors</u>			
Job Position			
Supervisory Nurse	5	2,6 ± 1,5	0,948
Non-supervisory Nurse	17	2,6 ± 1,8	
Number working hours			
≥40 hours/week	15	2,9 ± 1,8	0,220
<40 hours/week	7	1,9 ± 1,5	
Work Schedule			
Shift	9	2,8 ± 1,9	0,692
Non-Shift	13	2,5 ± 1,6	
Work Stress			
High	1	3,0	0,813
Medium	21	2,6 ± 1,8	

Note: SD=Standard Deviation, p-value using independent t-test, *significant p<0,05

overworking hours in the following weeks because this study was taken for 12 weeks while the questionnaire data was taken only in the 1st week of the study.

The non-shift study subjects were 13 people (59.1%) because in this hospital the nurses with excessive weight nutritional status mostly worked non-shift. The work schedule of nurses by shift and non-shift also had not any effect on weight loss after implementing nutrition counseling and REST™ Diet (p = 0.692). Theoretically, workers who work on shift schedules can get circadian rhythm disturbance which has the potential to increase ghrelin hormone and decrease leptin hormone, which can increase appetite.²⁰ The work shift for nurses in this hospital has been arranged as well as possible to avoid prolonged night shifts.

In this study, the nurses who had moderate work stress levels were 21 people (95.5%). The work stress did not show any significant effect on the weight loss of nurses with excessive weight nutritional status (p = 0.813). It might occur because of the ability of the study subject to manage stress well, so it didn't have any effect on the increase in food intake. In this hospital, there is a routine stress screening activity for workers by the mental health polyclinic. A Study by Cox et al. shows it is necessary to add stress management in a weight loss program to increase weight loss potential.²¹

After the study subjects did nutrition counseling and a REST™ Diet, there was a weight loss compared with the initial weight. The average weight loss occurred starting from the 2nd week. The greatest average weight

loss was found in the 12th week of the study, about 2.6 kg with a p-value <0.001 using the Bonferroni test. After receiving nutrition counseling, the knowledge of the study subject was increased to change an attitude toward a REST™ Diet. They did that diet to lose weight. This is parallel with Erina Masri's study that says there is a significant rise in average knowledge of intervention groups before and after getting nutrition counseling.²² Systematic review by de Menezes shows that mostly nutritional interventions studies in obesity conclude better weight loss is associated with calorie restriction and nutritionists' interventions.²³

The weight loss target in this study was 1-2kg/2 weeks, but the result showed the average weight loss was not achieved on target. After taking a look at the food record assessment, it may occur since the study subjects still had some difficulties to adhere a REST™ Diet. This might occur because the study subjects had difficulty in making dietary modifications. In the end, they tended to be disobedient to the diet.

Conclusion

Conducting intervention by nutrition counseling and implementing a REST™ Diet can lose weight on hospital nurses who have excessive weight nutritional status. Further research about the effect of nutritional counseling, REST™ diet, and physical activity among nurses who have excessive weight nutritional status needs to be conducted with a larger number of samples by still assessing the effect of individual and occupational factors.

Conflict of Interest

The authors affirm no conflict of interest in this study.

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