

Evaluation of Soft Diet Served in Five Private Hospitals in Amman, Jordan

Jafar M. F. El-Qudah^{1*}, Saddam S. Awaisheh², Hane M. Al-Dmoor³ and Maisa Mohammad Amin Al-Qudah^{4,5}

¹Professor Nutritional Biochemistry, Department of Nutrition and Food Processing, Faculty of Agricultural Technology, Al-Balqa Applied University, Al-Salt, 19117, Jordan

²Professor Food Analysis, Department of Nutrition and Food Processing, Faculty of Agricultural Technology, Al-Balqa Applied University, Al-Salt, 19117, Jordan

³Professor Food Chemistry, Department of Nutrition and Food Processing, Faculty of Agricultural Technology, Al-Balqa Applied University, Al-Salt, 19117, Jordan

⁴Associate Professor in Cell Biology, Department of Medical Laboratory Sciences, Faculty of Science, Al-Balqa Applied University, Al-Salt 19117, Jordan

⁵Associate Professor Cell Biology, Department of Medical Analysis, Faculty of Allied Medical Sciences, Zarqa University, Al-Zarqa Jordan

ABSTRACT

Meals of soft diet was evaluated, in five private hospitals located in Amman, Jordan. Menus of the diets were analyzed by calculating their content of energy, fiber, macronutrients and some micronutrients, (vitamins and minerals) then compared with standards. The mean content of energy in soft diet was 1775 kcal and the mean content of dietary fiber was 33.4 g. Carbohydrate, protein and fat contribution of the total energy were within the acceptable macronutrients distribution range in the diet. Soft diet contains excessive levels of sodium which exceeded the upper limits (UL) of 2300 mg. Overall, hospital meals provided a diet low in the following nutrients (potassium, vitamin D, vitamin E and vitamin K) and did not meet the nutritional standards. Based on "Choose My Plate" recommendations, mean contents of food groups of the three diets were ranged as follows: grains, 3.2-4.6 serving/d; protein, 2.6-3.4 serving/d, vegetables, 4.9-5.5 serving/d, fruits, 1.2-1.5 serving/d and dairy 3.1-3.4 serving/d. Many hospitals do not design diets to meet dietary recommendations. Hospital menus should be continuously evaluated to reflect the changes of the patients' needs.

KEY WORDS: SOFT DIET, HOSPITAL DIETS, MACRONUTRIENTS, MICRONUTRIENTS, JORDAN.

Article Information:

*Corresponding Author: qudah@bau.edu.jo

Received 11/10/2020 Accepted after revision 10/12/2020

P-ISSN: 0974-6455 E-ISSN: 2321-4007

Thomson Reuters ISI Clarivate Analytics

Web of Science ESCI Indexed Journal

Identifiers & Pagination:

Vol 13(4) E-Pub 31st Dec 2020 Pp- 1800-1804

This is an open access article under Creative Commons

License Attribution International (CC-BY 4.0)

Published by Society for Science & Nature India

DOI: <http://dx.doi.org/10.21786/bbrc/13.4/23>

INTRODUCTION

Adequate nutrient supply, covering energy, macro- and micronutrients is very important for good health and well-being. Inadequate nutrient supply can lead to malnutrition, whereas excessive nutrient supply may cause various diet-related diseases, such as obesity, diabetes, or cardiovascular diseases (Grochowska-Niedworok et al. 2019). A healthy diet is the one that guarantee regular intake of necessary nutrients according to individual needs. In hospitals, a healthy diet served for patients is the one that take into consideration individual needs of necessary nutrients according to their health conditions (Dumlu et al. 2014 ; The Scottish Government 2008). In patients with infectious diseases, good nutrition has positive effects, whereas, poor nutrition may slow down recovery from infectious disease due to the adverse effects on host immune function (AslıGizemPekmezci et al. 2018 ; Heidegger et al. 2013 ; Gianotti et al. 2002).Low intake of protein and energy leads to adipose tissue atrophy, immune deficiency, muscle wasting, poor digestion and inhibited nutrient absorption. To ensure optimal health, it is vital to consume a well-balanced diet containing adequate protein supply (Grochowska-Niedworok et al. 2019).

Nutritional therapy is an essential component of the management of disease and has an important role in helping achieve and maintain optimal control (Department Of Social Services, 2020). Generally, all hospital diets should meet the nutritional requirements of the assisted patient. Studies suggest that dietary recommendations are not met among hospitalized patients (Patricia et al. 2004 ; Wright et al. 2004). In our literature search, we found few published papers describing hospital patient menus (Al-Domi et al. 2011 ; Ahmad 2014 El-Qudah 2018) and therapeutic diets in Jordanian hospitals (Shaheen 1998 ; Bawadi and Abu-Jamous 2014).Thus, this study was conducted in five private hospitals located in Amman, Jordan to evaluate the mean content of soft dietof macronutrients, some micronutrients and energy and number of food groups based on my plate guide of meals served at these hospitals.

MATERIAL AND METHODS

This study is an observational one with a cross- sectional design. It was adopted to determine the content of one therapeutic diet (soft diet) of energy and some nutrients. The 3-day meal plans provided by each hospital were evaluated,in five hospitals, chosen randomly, located in Amman , Jordan. The data were collected over a period of three months (September to December 2014). The required permit to conduct the study was obtained from the Committee of Scientific Research. The study was approved by the department research committee, Nutrition and Food Processing Department at Al-Balqa Applied University. In addition, administrative approval were sought from the authorities on each hospital.

We visited nutrition department in each hospital for interviewing the dieticians in charge. We record menus

of three days soft diet. Amounts of ingredients for recipes in every item served as the prescribed meal plans for each hospital were recorded in a comprehensive database that allowed precise nutritional analyses by weight of food serving. The composition of the diet was analyzed in terms of the nutrient and energy content based on the United States Department of Agriculture Database, super tracker (United States Department of Agriculture. Super Tracker. Access on 2017) and food exchange system. The mean of three day nutrient contents of meals (2 weekdays and 1 weekend day) was calculated. Macro nutrients (carbohydrates, protein and fat), energy, dietary fiber and certain micronutrients are recorded for each food item.

The total values of each nutrient/day are summed& then an average is made upon the three days nutrient sums. Nutrient levels in soft diet menus were compared with standards based on the USDA's 2010 Dietary Guidelines for Americans (requirements for adult populations) (IOM Institute of Medicine, 1997/2005 and 2011 ; The Dietary Guidelines for Americans, 2010 ; New York City Food Standards: Patient Meals, 2012; Food Standards: Patient meals 2012). Recommended total daily amounts of food groups of the Choose My Plate guidelines were used for assessment of contents of these meals in each hospital.

Statistical analysis: Data analysis was performed in SPSS version 21. Descriptive statistics were usedand the data were expressed as mean, SD, frequency and percentage.

RESULTS AND DISCUSSION

The Mean daily contents of food groups were above the recommendations of dairy and vegetables, while grains, fruits and protein groups were below the recommendation in soft diets served by hospitals (Table 1).

Table 1. Mean content of serving number of food groups of soft diet, served in five Hospitals

Food groups	Serving number	Goal (serving/d)
Grains (oz)	3.8	6
Proteins (oz)	3.2	5
Vegetables (cups)	4.9	2.5
Fruits (cups)	1.3	2
Dairy (cups)	3.1	3

The mean daily energy content of the soft diet was 1775 kcal. The mean daily content of dietary fiber in the soft diet was 33.4 g, which is above the recommendations (Table 2). As seen in Table (3), CHO, protein and fat contribution of the total energy in the diet was within the AMDR. Overall, the mean content of minerals in the diet was within the standards (Table 4).As shown in (Table 5), the mean content of all vitamins in the soft diet, meet the nutritional standards, with the except of vitamin B6, B12 and niacin which were above the recommendations.The mean content of vitamin E and

vitamin D was below the recommendations, while it was within the recommendation for vitamin A and vitamin K in the soft diet (Table 6). Based on the results of the

present study, it seems that soft diet generally contain adequate nutrients.

Table 2. Mean content of macronutrients, Dietary Fiber, cholesterol and energy

Type of diet	Macronutrients			Energy(kcal)	Dietary Fiber (g)	Cholesterol (mg)
	CHO (g)	Protein (g)	Fat (g)			
Soft	231	91	54.1	1775	33.4	259.3

Table 3. Macronutrients percentage contribution of the total energy

Type of diet	CHO (%)	Protein (%)	Fat (%)
Soft	52.1	20.5	27.4

Table 4. Mean content of micronutrients in five private hospitals in Amman

Type of diet	Calcium (mg)	Potassium (mg)	Sodium (mg)	Iron (mg)	Magnesium (mg)	Phosphorus (mg)	Selenium (µg)	Zinc (mg)
soft	1018	3112	3307	29.6	255.9	1381	110.9	10.7

Table 5. Mean content of water soluble vitamins in five private hospitals in Amman

Type of diet	Vitamin C (mg)	Vitamin B6 (mg)	Vitamin B12 (µg)	Folate (µg)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Choline (mg)
soft	97.3	2.07	3.947	430.8	1.325	1.922	23	328.7

Table 5. Mean content of water soluble vitamins in five private hospitals in Amman

Type of diet	Vitamin A (µg)	Vitamin E (mg)	Vitamin D (µg)	Vitamin K (µg)
Soft	714.9	6.9	1.9	72.5

The evaluation of 3-day meal plans offered in the five private hospitals showed the mean daily content of calorie, macronutrients and many micronutrients were adequate and within recommendations, with the exception of some nutrients. Similar studies support these findings (El-Qudah 2018 ; El-Qudah 2016 ; Kyungjoo et al. 2010) . The analysis menus showed that the average amount of calcium supplied from soft diet was sufficient. Similar results were found in other studies (Shaheen 1998 ; El-Kadiki and Sutton 2005 ; Fulgoni et al. 2007).The results showed that hospital meals provided a diet low in vitamin E and vitamin D in the soft diet. Both nutrients did not meet the nutritional standards. Similar results were obtained by other studies (Moreira et al. 2012 ; Franklin et al. 2004). In a study conducted in Jordan, meals of regular diet were evaluated, in seven

Governmental hospitals located in three cities in the middle region of Jordan (El-Qudah 2018). In this study, all hospital diets provided low content of calcium, vitamin D and vitamin E and did not meet the recommendations (El-Qudah 2018). Although, hospitalized patients should receive a standard diets suitable for their diseases, there have been numerous reports that the nutritional intake of many hospitalized patients is suboptimal.

CONCLUSION

This study showed that many hospitals do not design diets to meet dietary recommendations. Hospital menus should be continuously evaluated to reflect the changes of the patients' needs.

Study Limitations: Hospitals included in this study were limited to the private hospitals, therefore, are not representative of all hospitals in . In addition, the results should be interpreted with caution given that we did not analyze meals directly.

ACKNOWLEDGEMENTS

The author thanks all hospitals that participated in the study for their cooperation. The study was not financially supported.

Conflict of Interest: The authors declare that they have no conflict of interest.

REFERENCES

- Grochowska-Niedworok, E., Brukalo, K., Całyniuk, B., Piekorz, J., Kardas, M., (2019). Assessment of Menus in a Selected Social Welfare Home with Regard to Nutritional Recommendations. *World Academy of Science, Engineering and Technology International Journal of Medical and Health Sciences* Vol:13, No:1
- Dumlu, EG., Ozdedeoglu, M., Bozkurt, B., Tokac, M., Yalcin, A., Ozt-Turk, L., Kilic, M., (2014). A general consideration of the importance of nutrition for critically ill patients. *Turk J Med Sci*, 44: 1055-1059. doi:10.3906/sag-1308-6
- The Scottish Government, Edinburgh. Food in Hospitals(2008).The Scottish Government St Andrew's House Edinburgh,EH1 3DG Available at: <http://www.gov.scot/resource/doc/229423/0062185.pdf>
- Aslı Gizem Pekmezci, Kürsat Gündoğan, Oguzhan Sitki Dizdar, Emine Alp Mese., (2018). Daily energy and protein intake in hospitalized patients in department of infectious diseases: a prospective observational study. *Progress in Nutrition*, 20, Supplement (2):98-105. DOI: 10.23751/pn.v20i2-S.5448
- Heidegger, CP, Berger, MM., Graf, S., (2013). Optimisation of energy provision with supplemental parenteral nutrition in critically ill patients: a randomised controlled clinical trial. *Lancet*, 381: 385-393.
- Gianotti, L., Braga, M., Nespoli, L., (2002). A randomized controlled trial of preoperative oral supplementation with a specialized diet in patients with gastrointestinal cancer. *Gastroenterology*, 122: 1763-1770.
- CALIFORNIA DEPARTMENT OF SOCIAL SERVICES. Short-Term Residential Therapeutic Program INTERIM LICENSING STANDARDS. Version 3.1 , effective 2020. Available at: <https://www.cdss.ca.gov/Portals/9/CCL/Childrens-Residential-Licensing/ILS/FINAL%20STRTP%20ILS%20v3.1.pdf>
- Patricia, VC., Nilian, SS., Camila, CJ., Guilherme, VP., Marta, CM., (2004). Variation in the Energy and Macronutrient Contents of Texture Modified Hospital Diets. *Rev Chil Nutr*, 38 (4):451-457.
- Wright, JE., Willis, GJ., Edwards, MS., (2004). Nutritional Content of Hospital Diets. *JAMA*, 291:2194- 2196.
- El-Qudah, J.M., (2018). Macro and micronutrients content of regular diet meals served at Governmental Jordanian Hospitals. *Progress in Nutrition*, 20, Supplement (2): 125-131. DOI: 10.23751/pn.v20i2-S.5482
- Al-Domi, HA., Fairs, ME., Habib, SM., (2011). Dietetic practice of nutritionists in Jordanian hospitals: An ethnographic study. *Arab Journal of Food and Nutrition*, 11(27): 43-64.
- Ahmad, MN., (2014). The Changing Face of Nutrition and Dietetics in Jordan. *European Scientific Journal*, 10 (33): 161-180.
- Shaheen, TA., (1998). Evaluation of diets served in two main hospitals in Amman. MSc thesis, Amman, Jordan: The University of Jordan.
- Bawadi, H., Abu-Jamous, (2014). Evaluation of the dietary pattern of patients with type 2 diabetes in Northern Jordan: An inconvenient truth! *J Diabetes Dev Ctries*, 34(3):134-138. DOI 10.1007/s13410-013-0149-
- United States Department of Agriculture. Super Tracker. Access on 2017. Available at: <http://www.choosemyplate.gov/supertracker-tools/supertracker.html>
- IOM (Institute of Medicine), 1997/2005 and 2011, Dietary Reference Intakes for Calcium and Vitamin D. Washington, DC: The National Academies Press. Available at: http://www.nap.edu/openbook.php?record_id=13050&page=R2
- The Dietary Guidelines for Americans, 2010. Available at: www.cnpp.usda.gov/DGAs2010-PolicyDocument.htm
- New York City Food Standards: Patient Meals, 2012. The City of New York, Department of Health and Mental Hygiene. Available at: <http://www.nyc.gov/html/doh/downloads/pdf/cardio/patient-meals-standards.pdf>
- Food Standards: Patient meals, 2012. The City of New York, Department of Health and Mental Hygiene. Available at: https://www.health.ny.gov/diseases/cardiovascular/heart_disease/toolkits/docs/patient_meals.pdf
- El-Qudah, J.M., (2016). Diet analysis content of energy macronutrients, calcium, sodium and iron provided to patients in a mental hospital in Amman, Jordan. *International Journal of Innovation and Applied Studies*, 16(1):150-154. <http://www.ijias.issr-journals.org/>
- Kyungjoo, K., Minyoung, K., Kyung-Eun, L., (2010). Assessment of foodservice quality and identification of improvement strategies using hospital foodservice quality model *Nutrition Research and Practice*. *Nutr Res Pract*, 4(2):163- 172.
- Shaheen, TA., (1998). Evaluation of diets served in two

main hospitals in Amman. MSc thesis, Amman, Jordan: The University of Jordan.

El-Kadiki, A., Sutton, A.J., (2005). Role of multivitamins and mineral supplements in preventing infections in elderly people: systematic review and meta-analysis of randomised controlled trials. *BMJ*, 330: 871.

Fulgoni, V., Nicholls, J., Reed, A., Buckley, R., Kafer, K., Huth, P., DiRienzo, D., Miller, G.D., (2007). Dairy consumption and related nutrient intake in African-American adults and children in the United States: Continuing Survey of Food Intakes by Individuals

1994-1996, 1998, and the National Health and Nutrition Examination Survey 1999-2000. *J. Am. Diet. Assoc.*, 107: 256-264.

Moreira,DCF., de Sa1, JSM., Cerqueira, IB., Oliveira, APF., Morgano, MA., Amaya-Farfanand, J., Quintaes, KD., (2012). Mineral inadequacy of oral diets offered to patients in a Brazilian hospital. *NutrHosp*, 27(1):288-297.

Franklin, G.,Miller., Ezekiel, J.,Emanuel, Donald, L., Rosenstein., (2004). Nutritional Content of Hospital Diets. *JAMA*, 291(18): 2194-2196.