THE CHANGING FACE OF NUTRITION AND DIETETICS IN JORDAN

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Abstract

This article describes and examines the elements and indicators of health, nutrition and dietetics transition in Jordan over the past three decades. The picture of dietetics and hospital foodservice in Jordan has changed drastically along with remarkable transition in nutritional and health status accompanied by very rapid dietary, socioeconomic, epidemiologic and demographic shifts. Accelerated changes have occurred in trends of general health and nutritional status including decline in infectious diseases, increased life expectancy, rise in urbanization, mechanization and market globalization, decreased physical activity, diets have become sweeter, energy- and fat-dense and rich in animal foods. Concordant troubling trends have been recorded for rise in morbidity and mortality of major diet-related chronic disorders, particularly diabetes, cardiovascular diseases, obesity and cancer. In contrast to this transition, the patterns of dietetics and hospital foodservice have changed at a slow but steady pace. Dietetics profession has gained some official recognition and legal status permitting certification or licensing and consultation and private practice, though this progress has been hindered by poor legislative and regulatory attributes and lack of internship and in-service training programs and national traditional diet manuals. This has greatly hindered the dietetics professionalization process and lead to fall short of international guidelines. Thus, dietitians have not attained suitable place in nutritional care process as their tasks have not been adequately set up, resulting in lack of harmonious relations between physicians and dietitians, a major deterrents to dietitians' performance. The need for dietetics organization is recognized in order to shape the profession's face to international standards.

Keywords: Nutrition, dietetics profession, transition, Jordan

Introduction

The expanding advances of science have brought an increasing complexity to the health care system. This necessitates the cooperation of a team of health specialists who share their respective knowledge for the welfare of the individual and the community (Krehl, 1976; Chernoff, 1979; Mahan, Escott-Stump & Raymond, 2014). It is well appreciated that only by good team work combining the expertise of physicians, nurses and dietitians in addition to other allied health professionals can best results for the individual or the community be obtained (Chernoff, 1983). In practice, the dietary therapy of patients is a threefold responsibility that rests upon the medical, the nursing and the dietary departments (Kulkarni et al., 2005; Insel, Ross, McMahon & Bernstein, 2011).

Adequate nutrition is central to physical and mental health, vigor, and achievement (Bidlack, 1996; Mahan et al., 2014). Good nutritional status is regarded as a desirable health-related goal (***USDA & HHS, 2010***). The nutritional well-being of the individual and community is a prime concern of the nutrition and dietetics profession (Maillet, Skates & Pritchett, 2005; British Dietetic Association, 2014). Dietitians are the most professionally educated group whose major concern is the application of nutrition science to health care (Chernoff, 1983; Stitzel, 2006). Hippocrates, the father of medicine wrote, “Let thy food be thy medicine, thy medicine be thy food,” highlighting the importance of diet in disease therapy (Todhunter, 1973). Sir Sinclair made this observation, "Medicine arose from dietetics Pythagoreans, including Hippocrates, used diet to cure diseases, and drugs only if these failed prevent and cure diseases, and drugs only if these failed" (Birch, Green & Pasketts, 1972).

At the present time, dietetics profession is well regulated in developed and many developing countries through official associations or societies. Their major function is to organize the practice of the profession, approve and accredit education and training programs in dietetics in these countries (Calabro, Bright & Bahl, 2001; Kulkarni et al., 2005; Australian Bureau of Statistics, 2013; British Dietetic Association, 2014). These associations are also committed to urge maximal utilization of the nutrition science and technology, advocate quality nutritional care, and promote the achievement of optimal health for the individual, group and population (Maillet et al., 2005; Kulkarni et al., 2005; Stitzel, 2006).

A wide range of improvements in health care facilities have occurred in Jordan (Jordan Department of Statistics, 2008 and 2013), with dietetics and foodservice progressing at a slow pace (Takruri,Tukan & Ahmad, 1990; Jordan Ministry of Health, 2005; Al-Domi, Fairs & Habib, 2011a). In this article we describe and examine the relevant aspects of developments of nutrition and health in Jordan during the past three decades focusing on the

dietetics profession and hospital foodservice, addressing the activities and duties that compose the role of the dietitian, highlighting limitations and proposing recommendations for continuing improvement and progress. It is hoped that a review of this field of an important allied medical profession will enhance further interest in the role of nutrition and dietetics in health care service in Jordan.

Human nutrition science

Tracing the history of the science of human nutrition leads to a well-defined geneological line. As a science, human nutrition has obtained its pedigree from chemistry, biochemistry, anatomy, physiology and the clinical medical sciences (Schneider, 1983; Mahan et al., 2014). The knowledge generated in these fields has a great influence on shaping the science of human nutrition, and in its emergence as a distinguished science. Human nutrition also shares some aspects of social origins of these sciences. This cross-fertilization has triggered a series of scientific breakthroughs, including identification of the nutritional elements, balanced diets, digestion of foods, nutrient absorption, and working out the complex metabolic pathways of the different elements (Insel et al., 2011; Mahan et al., 2014). Various forms of primary nutritional disorders have been identified as outcomes of specific nutritional deficiencies. Nutrition science has been also utilized in understanding different aspects of etiology, pathogenesis and clinical management of a wide variety of general diseases. Nutrition education, food processing, food safety and animal nutrition have become additional components of the nutrition science.

The factors which have shaped the body of knowledge of human nutrition also influenced the formation of the profession of nutritionists or dietitians (Chernoff, 1983; Insel et al., 2011; Mahan et al., 2014). Assessment of the nutritional status of individuals, groups and the community, determination of nutritional requirements and allowances, nutritional analysis of different foods or diets and making recommendations for healthful balanced diets, diagnosis and management of the primary nutritional disorders, meeting dietary needs in certain other clinical conditions, preparation and processing of foods and food toxicology are some of the major areas which have come within the purview of this profession (Hampl, Anderson & Mullis, 2002; Chima & Pollack, 2002; Maillet et al., 2005; Stitzel, 2006; British Dietetic Association, 2014). Clearly, these areas do carry enough weight, either in the form of research or as action programs, to place dietitians very high in the prestige hierarchy of professions. Because of this, the profession has been able to attract adequate numbers of talented persons (Bloch, Maillet, Howell & Winkler, 2007; Winterfeldt, Bogle & Ebro, 2011). This has aroused considerable interest in

nutrition and presents health care professionals with unprecedented opportunities to provide nutrition services, nutrition education and dietary counseling (Kocher, 1972; Mahan et al., 2014).

Today, we have a wealth of scientific knowledge about food and nutrition with fresh concepts and applications (Bloch et al., 2007; Winterfeldt et al., 2011). However, such knowledge must be put into action by every person who cares about health of the individual, group or community. Experts apply new innovations in computers, for instance, by merely pushing or just touching a button, but there is no push- or touch-button application of nutrition. In contrast, the practical application of new discoveries in nutrition must be made by everyone who chooses his own food (Bloch et al., 2007). However, a professional group, namely the health care team, is involved in the nutrition care process for helping others, especially the sick, to under- stand how to benefit by nutrition knowledge (Mahan et al., 2014). Physicians order therapeutic diets, dietitians translate the physicians' order for dietary modification into practical terms of food or nutritional products, and nurses deal with the patient while eating the food at the bedside (Chernoff, 1983).

Dietetics profession

According to Oxford Advanced Learner's Dictionary of Current English, the term "Profession" is defined as a type of job that needs special training or skill, especially one that needs a high level of education (Hornby, Cowie & Gimson 1980). Wolman's Dictionary of Behavioral Science provides more elaborative definition: a profession is an occupation which requires general and specialized education at a high level and which usually has some code of ethics defining the role the profession should play in society (Wolman, 1973). The legal definition of profession is not much more different; it reads as follows: a profession is a self-selected, self-disciplined group of persons who hold themselves out to the public as possessing a special skill derived from education and training and who are prepared to exercise that skill primarily in the interests of others (***Wright,*** 1951).

There should be three basic essentials of a profession to ensure its existence (Klass, 1961). The prime essential is the conception and birth within a teaching and training body, namely a university, where a profession inherits the necessary ideas and ideals for excellence; and without this idealism it cannot begin to exist. The second basic essential of a profession is the legal status (Klass, 1961). This provides a statutory basis in the law with official and public recognition and creates a mutual exchange of definable values between the professional group and the legislative body. The professional spirit, the third basic essential of a profession, is stemmed from the personal conscience of the individual member of a profession and the

sense of dedication to the community, and is considered the route of aspiration toward professional greatness and excellence (Klass, 1961).

While the above mentioned definitions of the term "profession" differ in detail, there is a general agreement that professions have the attributes contained in this definition (Weigley, 1979). From the results of studies into the nature and characteristics of a profession emerge developments that occur in the process of professionalization, including establishment of a professional association with membership requirements to bar unqualified; control of education and admission to practice by the members through accreditations; licensing or certification; name change to give heightened status and prestige to the occupation; and creation of altruistic code of ethics (Moore, 1970; Weigley, 1979). Taking the American Dietetic Association as an example, Weigley (1979) has shown that, as dietetics has developed over the years, it has followed the path of professionalization. The major tasks of the association include restricting the membership to those with formal education and training in the field, exercising control over education and admission to practice, providing registration as a form of certification, and adopting certain codes of ethics which are service oriented emphasizing the responsibilities of the dietitian (Chernoff, 1983; Adams & Stapell, 1987; Kulkarni et al., 2005; Australian Bureau of Statistics, 2013; British Dietetic Association, 2014).

The dietitian

The dietitian is often defined as a specialist educated for the profession responsible for nutrition care of individuals and groups (American Dietetic Association, 1974; Australian Bureau of Statistics, 2013; British Dietetic Association, 2014). Sociologically, the term "role" designates those tasks, responsibilities, and qualities that identify a specific relationship (Schiller & Vivian, 1974). The dietitian is expected to act in a certain way and to assume a well-defined pattern of activities, recognized and accepted by the health professionals who usually come in touch with in work settings. The role of the dietitian encompasses the services needed for the application of the science and art of human nutrition in helping people select and obtain food for the primary purpose of nourishing their bodies in health or disease throughout life span (Kocher, 1972; American Dietetic Association, 1974; Bloch et al., 2007; Winterfeldt et al., 2011). This includes at least the following functions, single or combined and coordinated to meet the needs of individuals and groups: foodservice system management, nutrition education and extension, dietary counseling, dietary therapy, or assessment of the food habits and practices and dietary status (Kocher, 1972; Mahan et al., 2014).

Three main general categories constitute the role of the dietitian in dietetics practice. The dietitian has a therapeutic role in hospitals through

participation in health care team and affects nutritional care of individuals and groups for maintenance of health (Schiller & Vivian, 1974; Chernoff, 1983; Bloch et al., 2007). The dietitian is in charge of the assessment of nutritional needs, development and implementation of nutritional care plans and evaluation of their results, education and counseling of patients and provision of instructions to foodservice personnel, as well as involvement in scientific research. The second role of the dietitian is an administrative task in foodservice systems management in hospitals and institutions that provide bulk food services affecting the nutritional care of groups through provision of optimal nutrition and quality food (Chernoff, 1983; Shank1in, Hernandez, Gould & Gorman, 1988; Winterfeldt et al., 2011). And thirdly, a preventive role in community which authorizes the dietitian to assess nutritional status of individuals and groups and to organize, coordinate, and evaluate nutrition components of the community health care services (American Dietetic Association, 1974; British Dietetic Association, 2014).

Nutrition and health trends in Jordan

Jordan, officially the Hashemite Kingdom of Jordan, is an Arab kingdom in the Middle East with a population estimated at 6.32 million in 2014. This country is currently experiencing a rapid growth with an annual growth rate of 2.2% (World Population Review, 2014). Jordan has recorded several impressive demographic, socioeconomic and health indicators in the last four decades (Jordan Department of Statistics, 2013). These indicators provide a clear evidence of a major shift in the trends of morbidity and mortality. With main health improvements, infant mortality has decreased from 122 in 1960 to 22 deaths per 1000 live births in 2004. Similar remarkable positive trends are recorded regarding maternal and children under-5 mortality. The crude death rate has decreased from 16 in 1960 to 7 per 1000 population in 2006. The average life expectancy at birth has increased from 47 in 1960 to almost 72 years in 2006. The population structure has changed dramatically over this period; the urban population has increased from 46.3% in 1960 to 82.6% in 2006, whereas, the rural population including the Bedouin have decreased from 53.7% in 1960 to 17.4% in 2006 (Jordan Department of Statistics, 2008).

In the last four decades, the available information about dietary patterns in Jordan indicates that this country has witnessed a considerable increasing trend in the average daily per capita energy and macronutrient intake (Jordan Department of Statistics, 2002; Alwan, 2006; Alwan & Kharabsheh, 2006). The average daily energy intake has increased by 25% during the period from 1962 to 2002. The contribution of carbohydrate to daily energy intake decreased from 72% in 1962 to 62% in 2002, while the contribution of fat to daily energy intake increased from 18% in 1962 to 27%

in 2002 (Alwan, 2006; Alwan & Kharabsheh, 2006). The protein intake has been fluctuating around 10% of daily energy intake from 1962 to 2002 (Jordan Department of Statistics, 2002). Cereals are the major contributor to daily energy intake (53%) with no significant change from 1962 to 2002. Other contributors to daily energy intake are: vegetable oils (14%), sugars (12%), vegetables and fruits (11%), meat (5%) and (5%) for milk and eggs (Jordan Department of Statistics, 2002, 1992 & 1997; Alwan, 2006; Alwan & Kharabsheh, 2006). It is worth noting that review of trends in daily intake of energy, protein and fat in the Arab Middle Eastern countries over the past four decades revealed patterns similar to those of Jordan (Food and Agriculture Organization, 2005).

Cereals, mainly wheat and rice, have constituted the highest amount of food consumed in Jordan, 210 in 1997 and 218 kg/capita/year in 2002, followed by fruits and vegetables, 188 in 1992 and 213 kg/capita/year in 2002 (Jordan Ministry of Agriculture, 2005). The major fruits and vegetables consumed are tomato, potato, cucumber, citrus fruits, melons and apples (Jordan Department of Statistics, 1992, 1997 & 2002; Jordan Ministry of Agriculture, 2005). Poultry consumption has increased from 30 in 1992 to 40 kg/capita/year in 2002. The consumption of milk and its products has also increased from 30 in 1992 to 36 kg/capita/year in 2002. Fresh milk and yogurt have contributed 16% and 52% of the total milk consumption respectively (Jordan Department of Statistics, 1992 & 2002; Jordan Ministry of Agriculture, 2005).

Although the disease burden due to infectious diseases has been steadily declining, Jordan is witnessing an epidemiological transition characterized by an alarming and troubling increase in diet-related, non-communicable diseases, most importantly cardiovascular diseases, obesity, diabetes mellitus and cancer (Alwan, 2006; Alwan & Kharabsheh, 2006). These diseases are epidemic and are the leading causes of death in Jordan with cardiovascular diseases and cancer responsible for more than half of all deaths (Alwan, 2006; Ajlouni, 2010). Hypertension, coronary heart disease and stroke are the principal cardiovascular diseases (Mahan, et al., 2014). About 32% of Jordanians aged 25 years and above have hypertension (Jordan Ministry of Health, 1997), and 85% of them are overweight or obese (Alwan, 2006). Diabetes mellitus and glucose intolerance prevail in 13.4% and 9.8% of Jordanians aged 25 years and above respectively, with at least 10% of the adult population have diabetes mellitus (Ajlouni, Jadduo & Bateiha, 1998a). Obesity is found to affect 60% of women and 33% of men aged 25 years and over (Bateiha, Jadduo & Ajlouni, 1997; Ajlouni, Jadduo & Bateiha, 1998b), with over 50% of them are physically inactive (Alwan, 2006). Obesity is also found to affect women of Jordan Badia (Ahmad, Takruri & Tukan, 2006) and school children (Ahmad & Darawsheh, 2002).

The crude incidence rate of all cancer types among Jordanians is 64.4 per 100 000 (63.1 for men and 65.7 for women), with breast and colorectal cancers representing the most prevalent types (Alwan & Kharabsheh, 2006).

Reports in Jordan further indicate a substantial increase in a number of micronutrient related public health problems. These include anemia, iron deficiency anemia, folate deficiency and insufficiency in preschool children, women of childbearing age and adolescent girls (Serdula et al 2014) and iodine deficiency states (Mirmiran, Golzarand, Serra-Majem & Azizi, 2012). Subclinical vitamin A deficiency in school children (Khatib, 2002) and deficiency of vitamin D (Jazar, Takruri, & Khuri-Bulos, 2011) and vitamin B_{12} (Barghouti, Younes, Halaseh & Said, 2009) are additional micronutrient related public health problems.

As a preventative food-based approach to improve micronutrient status of Jordanians, a national program of fortification of wheat flour with 9 vitamins and minerals has been implemented in 2006 in collaboration with world health organization (Jordan Ministry of Health, 2006). To counteract iodine deficiency and insufficiency, a similar national salt iodization program has been launched in 2002 through which table salt iodization became mandatory at the factory level (Jordan Ministry of Health, 2002). The impact of these programs on the health and micronutrient status of the population is still to be evaluated (World Health Organization, 2012).

It is now obvious that the aforementioned indicators of socioeconomic, demographic, dietary and epidemiological changes that have take place in Jordan over past four decades provide a clear evidence of a major transition in nutrition and health moving in a rapid pace. This transition is shifting from nutritionally inadequate diet mostly based on local foods to a diet high in calories, sugars, refined carbohydrates, saturated fat, cholesterol and salt with concordant shift in the morbidity and mortality as a result of chronic diseases. Thus, nutrition-related noncommunicable diseases are increasing in Jordan to an alarming degree. This nutrition and health transition is quite consistent with that taking place worldwide (World Health Organization, 2011; Ezzati & Riboli, 2013; Dalen & Stephen, 2014; Mahan et al., 2014). Progressive urbanization, mechanization and globalization of food marketing and distribution favoring increased availability and consumption of energy-dense foods are some reasons for this transition (Alwan, 2006; Alwan & Kharabsheh, 2006; Ajlouni, 2010).

Nutrition and dietetics in Jordan

Despite the wide range of improvements in the health care service that have been achieved during the last four decades in Jordan (Alwan, 2006; Jordan Department of Statistics, 2008, 2013 and 2014), little interest has been given to the nutrition and dietetics (Takruri et al., 1990; Al-Domi et al.,

2011a). Until 1970s, the nutritional care has been delivered predominantly in hospitals and community health centers by physicians, nurses and other nutritionally unqualified professionals. Practically, dietetics and foodservice was first introduced in 1973 when a number of nutritionists or dietitians have been appointed in several hospitals in the country (Takruri et al., 1990). These dietitians were the nucleus from which further developments in the field have arisen. In this regard, one of the most significant achievements was establishment of the first department in nutrition and food technology at the University of Jordan in 1979. Starting from 1988, this department has introduced several postgraduate programmes: Diploma, MSc and PhD in human nutrition and dietetics, and food science and technology (Jordan Ministry of Higher Education, 2014). Through this period, five governmental and three private universities, two official medical centers, as well as several community colleges have established separate nutrition departments (Jordan Ministry of Higher Education, 2014). This has insured a continuous supply of qualified graduates both in Jordan and neighboring countries.

In tracing the status of dietetics and foodservice in Jordan, very limited sources of information are available. There are only two main early studies that have dealt with the subject in the past few decades. The first study that has been made in the early 1980s was a survey of foodservice in the largest hospitals in the major cities of six Middle Eastern countries namely Jordan, Lebanon, Syria, Kuwait, Bahrain and Saudi Arabia (Turnlund & Tannous, 1983). It has been shown that there are few individuals with adequate training in dietetics and food service management in dietary departments of these hospitals. As a result, normal diets have been sometimes inadequate and therapeutic diets have been seldom and usually incorrectly used. Poor kitchen sanitation has been also reported. With respect to Jordan, three hospitals with 1724 beds have been surveyed (Turnlund & Tannous, 1983). There have been only five dietitians with inadequate dietetics training in these hospitals.

The second study was a survey of the status of hospital dietetics and food service in Jordan, and has been made in 1989 (Takruri et al., 1990). Eleven main hospitals with a total number of beds of 2839 have been studied. This has constituted more than 50% of the overall number of beds in the fifty-four hospitals that were present in the country at that time (Jordan Ministry of Health, 1988 and 2013). There have been a total of thirty nine university graduate dietitians or nutritionists in the surveyed hospitals. .Of these, twenty three have been graduates of department of nutrition and food technology, the University of Jordan. Although, most dietitians had over two years work experience, none of them have had any training course in dietetics and food service. Effective dietary planning and preparation have

been observed. A variety of therapeutic diets has been used and has comprised over 40% of diets served in these hospitals (Takruri et al., 1990

During the 1990s, several studies, mostly in the form of postgraduate researches, have been undertaken to evaluate certain aspects of hospital dietetics and foodservice in Jordan. In a study to evaluate plate waste and food acceptability by a sample of 186 diabetic patients in two main hospitals in Amman, the mean percentage of wasted calories was about 29% (Al-Farah, 1990). Large amount of food served, unacceptability and dislike of hospital food and receiving food from outside the hospital were among the reasons for these wasted calories (Al-Farah, 1990). Contents of sodium and potassium have been assessed in regular and several therapeutic diets served in three hospitals in Amman, and have been found to exceed the upper value of the daily recommended intake for adults by an average of 78% for sodium and 50% for potassium (Abu-Sheikha, 1993). Regular, low salt, diabetic, high- protein, high- carbohydrate and high- energy diets have been evaluated in two main hospitals in Amman for nutrient adequacy and therapeutic individuality (Shaheen, 1998). It has been shown that the individualizing therapeutic diets was not applicable in the studied hospitals, and diets were inadequate in milk and fruit groups with great variations in the contents of calories and macronutrients (Shaheen, 1998). Abstracts of several other graduate researches that have dealt with various subjects of food, nutrition and dietetics in health and disease in Jordan over the period 1990-2010 have been compiled and found elsewhere (Arab Journal of Food and Nutrition, 2011). Further, poor medical nutrition therapy and lack of therapeutic diet individuality have been reported for diabetic patients in ten Jordanian hospitals (Hourani, Atoum, Alboqai & Ismail, 2009). Taken together, the results of these studies clearly show that hospital dietetics and foodservice in Jordan fall short of international practices and guidelines.

Understanding dietetics and hospital foodservice in Jordan seems to progress very slowly but steadily during the last four decades. Earlier and later studies in Jordan have shown that various administrative, therapeutic and preventive functions have come within the purview of the role of the dietitian (Turnlund & Tannous, 1983; Takruri et al., 1990; Al-Domi et al., 2011a). Table 1 shows the major functions of hospital dietitians in Jordan. These functions have been indicated to conform to those recommended by the international professional organizations (Kulkarni et al., 2005; Australian Bureau of Statistics, 2013; British Dietetic Association, 2014), though the regulations that describe the job description for the dietetics profession in Jordan are not clear. However, the extent of implementation of the reported dietitians' tasks has been shown to vary considerably from one hospital to another (Takruri et al., 1990; Al-Domi et al., 2011a). In addition, practicing

hospital dietetics in this country is not without problems; table 2 lists the most prominent obstacles facing dietitians and nutritionists in Jordan.

In Jordan, dietitians have not attained an appropriate place in the health care team (Takruri et al., 1990; Al-Domi et al., 2011a). They have not been also given the opportunity to participate in team activities or to make a significant contribution in decision-making processes regarding the nutrition care. Lack of harmonious relationships between physicians and dietitians is

Table 1 Functions performed by hospital dietitians in Jordan[1].

Patient-related functions:
• Preparation and planning diets and meals.
• Preparation and dispensing special nutrition mixes and formulas.
• Assessment of nutritional status.
• Nutrition care planning and implementation.
• Nutrition counseling and education.
• Nutrition care follow-up.
Administrative functions:
• Foodservice management duties.
• Foodservice personnel management.
• Quality control assurance of diets and meals.
• Development of cycle menus and meals.
• Nutrition education of other health professionals.
• Nutrition education and training of foodservice personnel.
• Compilation and development of educational.materials.
• Development of dietary department plans and programs.

[1]Amended from (Takruri et al., 1990; Al-Domi et al., 2011a)

Table 2 Main Problems facing hospitals dietetics in Jordan[1].

• Inadequate legislations for organizing dietetics practice.
•. Restrictions of hospital plans and policies.
• Inadequate description of dietitians' formal responsibilities.
• Inadequate recognition of dietitians' therapeutic role.
• Poor participation of dietitians in nutrition care decision-making process.
• Lack of participation of dietitians in the health care team activities.
• Lack of coordination between dietary, medical and nursing departments.
• Lack of harmonious relationships between physicians and dietitians.
• Poor emphasis on patients' nutrition education and counseling.
• Lack of internship programs and in-service dietitians' training.
• Unavailability of local diet manuals and traditional food exchange lists.

[1]Amended from (Takruri et al., 1990; Al-Domi et al., 2011a)

one of the major deterrents to the performance of the dietitian (Turnlund & Tannous, 1983; Takruri et al., 1990). Many physicians and nurses think that dietitians are only concerned with food, and their work is associated with that of a cook. Physicians also tend to overlook dietitians' backgrounds in human nutrition, dietary therapy, biochemistry, physiology and metabolism. In effect, these limitations have adversely influenced the development of the dietitians' image as a professional member of the health care team.

In the1970s and 1980s, physician-dietitian relationship has been a subject of research in the developed countries. Studies have indicated that there is a discrepancy between the way dietitians see their role and the way physicians see it (Schiller & Vivian, 1974; Chernoff, 1979 and 1983; Ryan, Foltz & Finn, 1988). The highest disparity has been found for activities like giving seminars for the physicians and professional personnel, attending medical rounds, taking nutritional histories, and seeking causes of dietary problems. This disharmony has been reported to result from inherent differences in the philosophies of physicians and dietitians towards professionalism, nutritional care, and roles of the health care team members (Schiller & Vivian, 1974; Chernoff, 1983). Similar to what we are observing nowadays in Jordan, dietitians have not been given the opportunity to make a contribution to the decision-making (Chernoff, 1983). Many physicians also tend to pay no attention to the dietitians' academic background, particularly physiology and biochemistry. Today, dietitians are viewed as competent, knowledgeable, professional, expert, well respected, and more involved in direct patients' care functions (Kulkarni et al., 2005; Bloch et al., 2007; Australian Bureau of Statistics, 2013; British Dietetic Association, 2014).

In Jordan, although great developments have been recorded in the higher education of nutrition and dietetics (Jordan Ministry of Higher Education, 2014), dietetics profession has remained without legal cover till 1999. Nevertheless, a step forward in this field is that the profession has obtained its legal status in the Jordanian law and has gained official and public recognition through the release of rules in 1999 and their modifications in 2005 regulating nutrition profession practice (Jordan Ministry of Health, 2005). This certainly gives a statutory basis in the law and provides a sort of official organization for the profession. The rules define briefly nutrition profession and introduce two titles of areas of nutrition and dietetics practice which include the nutritionist or dietitian and the nutrition technician with concise description of each and education requirements. Neither distinction between the nutritionist and the dietitian is given nor are comprehensive responsibilities listed. Another step forward in this regard is the introduction of officially certified consultation and private practice of nutrition and dietetics throughout Jordan (Jordan Ministry of Health, 2005). This type of practice is now undergoing in a variety of certified settings; nutritionists have offices or clinics within their homes, in office buildings and in allied health buildings, or in physicians' offices. These events are somewhat in line with those which have taken place in the developed countries forty years ago (Trithart, & Nobel, 1978; Schiller, 1984).

Whereas the hospitals are the main employers of dietitians, they are also recruited by a variety of institutional settings in Jordan (Takruri et al.,

1990; Al-Domi et al., 2011a). These include maternity and child health centers, handicapped centers, hostels, hotels, sports clubs, and pharmaceutical stores particularly those dealing with infant foods and special nutrition formulas, as well as food supply departments of the Jordanian Armed Forces. Although no formal records are available regarding these developments, they undoub- tedly indicate the growing expansion in the range of dietetic practice in Jordan. In line with these developments, nutrition and dietetics profession is continually facing with many challenges and opportunities.

Klass (1961) has suggested three basic essentials for a profession to exist, namely a university as a teaching and training body, a legal status and professional spirit and excellence. Nutrition and dietetics profession in Jordan seems to comply totally with the first essential and partly with the second and the third essentials. On the other hand, in Jordan, as dietetics profession has developed by time, it has not completed the process of professionalization described by Weigley (1979), which should include establishment of a professional body or association, accreditations, licensing or certification, name change to give heightened status and prestige, and creation of altruistic code of ethics. It is possible that this process is interrupted by shortages of the legal attributes and lack of organizing body and internship programs. However, in Jordan, a noticeable, though with slow pace, progress in this profession has occurred over the past four decades (Turnlund & Tannous, 1983; Takruri et al., 1990; Jordan Ministry of Health, 2005; Al-Domi et al., 2011a).

Until recently, no efforts have been made to establish food guides or food exchange lists that include local or traditional foods and composite dishes. This issue is perhaps a central limitation for adequate nutrition intervention for individuals, families, groups and the whole community in Jordan. Food guides and food exchange lists are invaluable tools for implementation of nutrition care process including planning and evaluation of diets and meals, nutrition education and counseling, assessment of nutritional status, and are the core for developing health-based new food products, diets or recipes (Franz, Barr & Holler, 1987; Wheeler, Franz & Barrier, 1995; American Dietetic Association, 2008)). They are also the key element that enables nutritionists and dietitians to effectively participate in the health care process at all levels of the dietetics practice (Mahan et al., 2014). Dietitians in Jordan rely basically on the American- based food guides and food exchange lists (American Dietetic Association, 2008), and often faced by cultural and traditional limitations of food choices. Cultural and traditional considerations are integral features of successful nutrition interventions in individuals and communities (O'Doherty & Holm, 1999). In Jordan, provisional meal-planning exchange lists for traditional dishes have

been developed (Bawadi & Al-Sahawneh, 2008). A food exchange list for Middle Eastern appetizers and desserts commonly consumed in Jordan has been also documented (Bawadi, Al-Shwaiyat, Tayyem, Mekary & Turr, 2009). These lists certainly enhance public awareness towards sciences of food, nutrition and dietetics, and enable consumers, dietitians and foodservice professionals to exchange foods for better nutrition and healthier food selections incorporating the food habits and culture of the Jordanians. They undoubtedly form the basis from which further developments in this field could be achieved.

Another important issue related to nutrition and dietetics is the national and institutional foodservice management. Over the past four decades, in Jordan, studies dealing with this subject are scarce. Information on food losses including those during storage, preparation, serving, leftovers and food plate waste is also scarce. Globally, it is well understood that more than half of the food produced is wasted, lost, or discarded due to inefficiency in food chain management (United Nations Environment Programme, 2009). Good food management could avoid the majority of this food waste (Knight & Davis, 2007). A preliminary model to address food waste and food losses in Jordan has been reported; this was an investigation of the food plate waste by a group of students at the University of Jordan (Al-Domi et al., 2011b). It has been shown that proportions of the amounts of food plate waste are very low. Simple cost of food and low-income of the students were the factors constraining the amounts of food plate waste (Al-Domi et al., 2011b). This model highlights the important role of food and nutrition professionals in foodservice management and encourages well-designed national studies to lessen the impact of food losses on community health and national economy in Jordan.

Conclusion and directions

Nutrition is an integral part of the health care service. The nutritionist is central to the health care team and affects the medical nutrition care of individuals and groups for health maintenance. Marked nutrition transition has occurred in Jordan in last forty years accompanied by changes in the general health especially increased morbidity and mortality from diet-related chronic diseases. In Jordan, the face of nutrition and dietetics profession and its practice has changed slowly but steadily over this period, though does not match the increasing changes in the other nutrition and health sectors. It also falls short of the international guidelines and standards. It seems that the current official legislations and regulations are not adequate enough to shape the profession and upgrade its practice. Lack of organization structure and in-service training and internship programs could be some of several reasons behind this professional dysintegtity and slow pace progress. The officially

certified consultation and private practice is perhaps the most significant change that has occurred to this profession over the past four decades in Jordan. Priorities should be given to adequately set up dietitians' formal job description and to establish programs for continuing education and training. Scientific research may be directed towards organizing and shaping dietetics profession to international standards and developing national traditional diet manuals.

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