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Pediatric Outpatients' Prescribing Pattern, Saudi Arabia

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Abstract

The objective of this study was to evaluate the prescribing pattern in a pediatric outpatient department in tertiary hospital in Taif, Saudi Arabia.

Materials and method: A retrospective cross-sectional study was carried out in an Alhada Armed Forces Hospital, Taif, KSA. A randomly 700 outpatients' prescriptions were studied in the period from August to December 2012. The screened prescriptions were analyzed by (IBM SPSS version 22).

Results: The results showed that: The average number of medicines per prescription was 2.29. Missing information of prescriptions was observed in patients' ages (70.1%), weight (96.6%), and diagnosis (92%). The number of prescribed medications by generic name was (28.3%). Overall (19.1%) of the studied prescriptions were containing antibiotics. Most dispensed antibiotics classes were penicillins (74.5%), and cephalosporins (14.6%).

Conclusion: This study showed that appropriate prescribing pattern in pediatric outpatient department in the hospital but there was missing in prescriptions' items. Interventions of proven success and printed prescription format and follow up to complete the prescription elements are highly recommended. Encouraging the use of computerized system to ensure safe prescribing is also recommended.

Key words: Prescribing pattern, pediatric, outpatient, Saudi Arabia

Introduction

Healthcare professionals have a responsibility of creating a safe medication environment and reducing risk to a vulnerable pediatric population. But irrational prescribing is still one of major health problem in the world, and according to World Health Organization (1); about half of the patients have incorrect medication due to either dispensing or inappropriate sold.

Although one of the major roles of physicians is prescribing, they are usually under pressure to diagnose, prescribe medication and finally reach to proper patient management. Regarding prescribing medicines; the physician usually prescribes medicine according to the found diagnosis, or for pleasing his patient, or to decrease patient anxiety (2).

In many countries including Saudi Arabia the patient sometimes forces the doctor to prescribe special medicines (3-6). The Centers for Disease Control and Prevention (7) and Arnold et al, 2011 (8) estimate that tens of millions of antibiotic prescriptions are written each year for viral infections that not treatable with antibiotics.

Several easily identified factors are associated with a large proportion of medication prescribing errors. By improving the focus of organizational, technological, and risk management educational and training efforts using the factors commonly associated with prescribing errors, risk to patients from adverse drug events should be reduced (9). A study conducted in Riyadh, KSA found an incidence of 7.7% prescribing errors in 1582 written medication orders, the dominant errors identified were the wrong strength and wrong drug administration frequency (10). Other study was carried out to identify prescribing errors in the general pediatric wards and a pediatric intensive care unit of a tertiary hospital (11). Investigators reviewed 2380 medication orders and identified 56 prescribing errors per 100 medication orders and the majority of these errors (79%) were classified as potentially harmful. Effective pediatric patients' medical treatment depends on an accurate diagnosis by physicians then selection an optimum medication regimen.

In order to improve medication prescribing by doctors, a systematic review of current actual prescribing patterns should be studied. A baseline survey on the drugs prescribing is an important step to understand the medicines use weaknesses. The obtained data can be utilized by the decision

makers in addressing reforming prescribing policies aiming to promote the drugs prescribing practices in pediatric hospitals in Saudi Arabia. The objective of this study is to provide data on drugs prescribing patterns in outpatient pediatric department in a tertiary hospital in Taif, Saudi Arabia to address a reformation of medicines prescribing guidelines and policies.

Materials and methods

Study design

A retrospective, cross-sectional descriptive study was conducted in the Outpatient Pharmacy Department of Al-Hada Armed Forces Hospital.

Inclusion and exclusion criteria

Inpatient settings were excluded, as WHO, 1993 (12) prescribing indicators measure aspects of outpatient treatments but are less useful in inpatient settings where the drug use patterns are more complex. Patients re-attending for an existing health problem or those attending to receive preventive services such as vaccination were also excluded.

Sample size

Stratification, according to the four seasons (January to March, April to June, July to September, and October to December) was done. Every season considered as one unit. The total sample size was 700 prescriptions, 175 prescriptions from each season.

Data collection

To ensure reliability, procedures for sampling, data collection, and analysis were defined before starting the field work. The data collection plan was clearly specified to the data collectors in order to ensure standardization and consistency of the data collection process.

Three trained final students were collected the data. Each one of them collected the same data from the pharmacy. They were familiar with the pharmaceutical terms, thus able to record the data accurately. Data collectors were provided with drug reference lists including latest Essential Medical List (EML) copies. The Three data collectors practiced together in the pilot study, this is to ensure consistency of data collection.

Study instruments

A well-designed data collection form was developed. The following prescribing indicators were measured: The average number of drugs per encounter, route of administration, The percentage of drugs prescribed by generic name, The percentage of injectables' encounters, the percentage of drugs prescribed from EML, presence or missing of major prescription's information such as: patient's age, gender, weight, name, etc. Also the prescriber's information for example; prescriber's name, signature, specialty, etc were investigated. Regarding medication prescribed; presence of the unit dosage forms strength, whether the dose information is complete? And finally prevalence and information about antibiotics' type, formulation and combination were determined. In accordance with the WHO list of products to be counted as antibiotics, combination drugs were counted as one drug.

Statistical analysis

Data was processed by using IBM SPSS, version 22. Mean and frequencies as percentages were used to describe variables. Chi-square analysis was used to test the association between different variables. P value < 0.05 was considered as statistically significant.

Results

A total of 700 prescriptions were analyzed, 463 (62.3%) of them were belonged to males. The current study revealed that, the majority of prescriptions were missing the patients' ages 491 (70.1%) and patients' weights 676 (96.6%). The date of prescriptions and diagnosis were not mentioned in 698 (98.3%) and 644 (92%) respectively. Regarding the availability of prescribers' information; the name of prescribers 676 (96.6%), their specialty 664 (94.9%) and their signatures 685 (97.9%) were mentioned in the majority of prescriptions. Although almost 676 (96.6%) of prescriptions were written in an official format, only 3 (0.4%) of them were printed, Table 1.

Table 2 showed the availability of information about medicines prescribed and its relation with patient's gender. It was clear that, most of medicines' information was available for example; unit dosage form was available in 682 (97.4%) and

Table 1. Prevalence of missing items among prescriptions

Variables		Frequency	Percentage
Age	available	209	29.9%
	Non-available	491	70.1%
Weight	available	24	3.4%
	Non-available	676	96.6%
Date of prescription	Non-available	12	1.7%
	Available	688	98.3%
Prescriber name	Non-available	24	3.4%
	Available	676	96.6%
Prescriber specialty	Non-available	36	5.1%
	Available	664	94.9%
Prescriber signature	Available	685	97.9%
	Non-available	15	2.1%
Diagnosis	Available	56	8.0%
	Non-available	644	92.0%
Writing. Type	Print	3	0.4%
	Hand-Written	697	99.6%
Legibility	Yes	631	90.1%
	No	69	9.9%
Prescription format	Official	698	99.7%
	Non-official	2.0	0.3%

Table 2. Information about medications prescribed in the collected prescriptions

Medicine's information		Frequency	Percent	P-value
				Gender
UDF strength	Available	682	97.4%	0.272
	Non available	18	2.6%	
Regimen	Available	486	69.4%	0.577
	Non available	214	30.6%	
Dose information	Complete	565	80.6%	0.967
	Incomplete	114	16.4%	
	Non available	21	3%	
Instruction information	Complete	478	68.2%	0.945
	Incomplete	188	26.9%	
	Non available	34	4.9%	
Naming	generic100%	198	28.3%	0.459
	brand100%	306	43.7%	
	Combined	196	28.0%	
Refill prescription	Yes	9	1.3%	0.141
	No	691	98.7%	

dosage regimen in 486 (96.4%). The dominant medications in the current study were prescribed in brand names 306 (43.7%), while generic names were found only in 198 (28.3%) prescriptions. The patient's gender had no significant impact on these data ($P > 0.05$).

The mean number of the prescribed medicines was 2.28 ± 1.12 drugs per prescription. Figure 1 showed that, half of medications prescribed were in syrup form 355 (50.7%), suspension 112 (16%), while injection was the least prescribed unit dose form 13 (1.8%).

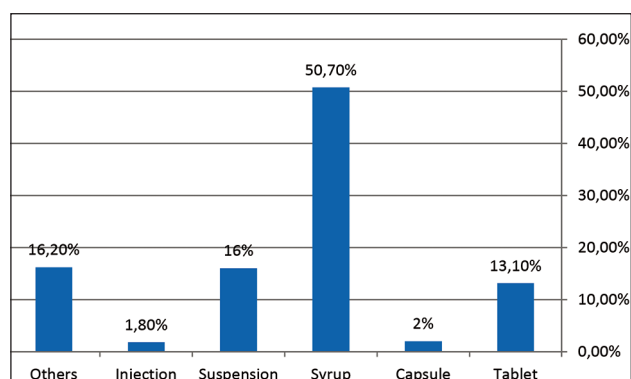


Figure 1. Types of prescribed formulations

Further analysis explained that, only 135 (19.2%) of medicines prescribed were antibiotics. The dominant classes of antibiotics were penicillins (74.5%) and cephalosporins (14.6%), Figure 2.

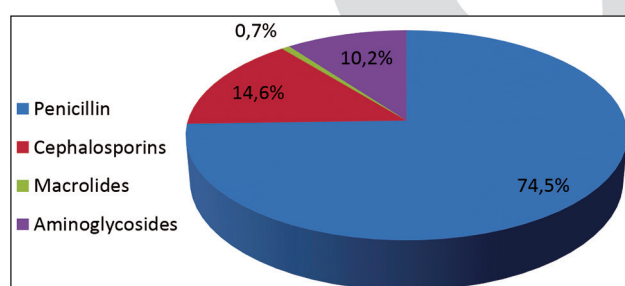


Figure 2. Classes of prescribed antibiotics

Table 3 illustrates the relationship between the prescribed antibiotics and their route of administration with the prescribers' specialties. Regarding prescribing antibiotics; 7 (8.5%) of consultants' pediatrics' prescriptions were containing antibiotics

while 112 (24.1%) of residents' prescriptions were containing antibiotics ($P < 0.001$). All consultants' prescribed antibiotics were in oral form, while 99 (87.6%) of those prescribed by residents were injections. The residents were the only doctors prescribed more than one antibiotics in one prescription.

Discussion

Drug utilization evaluation (DUE) is continuing, organized evaluation of drug that used to ensure the appropriate use of medicines at an individual patient level (13).

The main objective of DUE is to promote rational use of medicines which is essential to practice in health care setting as drugs constitute a large percentage of health care cost (14). Clarification of problems in drug utilization is very important to help health authorities to have a right decision. Although prescriptions' writing items are very important to decrease mistakes and improve patients' healthcare through dispensing by pharmacist. In the current study the missing items prevalence was common, for example; patients' ages (70.1%) and weight of patients (96.6%) were not mentioned in majority of prescriptions. This is in contrast with a previous study in Saudi Arabia by Neyaz et al, 2011 (15), which reported 89.3% of prescriptions recorded patient age in public health center in Riyadh, also, high rate of prescriptions involved age and weight in primary healthcare centers in Qassim Region, (16).

Table 3. The relation between prescribed antibiotics and prescribers' specialty

Prescriber specialty	Presence of antibiotics		Rout of antibiotics prescribed			More than one antibiotic	
	No	Yes	Injection	Oral	Combined	No	Yes
Consultant pediatric	75 (91.5%)	7 (8.5%)	6 (85.7%)	0 (0%)	1 (14.3%)	7 (100%)	0 (0%)
Dentist	0 (0%)	1 (100%)	0 (0%)	1 (100%)	0 (0%)	1 (100%)	0 (0%)
Director of pediatric	7 (100%)	0(0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
ENT	1 (50%)	1 (50%)	0 (0%)	1 (100%)	0 (0%)	1 (100%)	0 (0%)
Family medicine	3 (60%)	2 (40%)	1 (50%)	1 (50%)	0 (0%)	2 (100%)	0 (0%)
NA	32 (88.9%)	4 (11.1%)	0 (0%)	4 (100%)	0 (0%)	4 (100%)	0 (0%)
Nephrology	1 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Resident	352 (75.9%)	112 (24.1%)	2 (1.8%)	99 (87.6%)	11 (9.7%)	108 (95.6%)	5 (4.4%)
Surgeon	1 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Registrar	89 (92.8%)	7 (7.2%)	0 (0%)	5 (71.4%)	2 (28.6%)	7 (100%)	0 (0%)
Total	561 (80.1%)	134 (19.1%)	9	111	14	130	5
P-value	0.000		0.121			0.985	

The results of this study revealed that, the mean number of prescribed drugs per consultation was 2.28 ± 1.12 this finding was less than a new study in the same area on adult patients which reported the mean number per prescription was 2.74, (17), and slightly higher than a study conducted in Public Primary Health Care in Saudi Arabia which was 2.08 (18).

And higher than results reported by Anteneh 2013 in Ethiopian study which was 1.9 drugs per prescription (19).

Usually hand written prescriptions may increase the errors (20). In this study only 0.4% of prescriptions were printed. This may be a possible reason of medication errors' increasing occurrence. Prescribing medicines in generic names decreases the medications' cost. Prescribing in generic names in current study (28.3%) was higher than that reported by Eldalo, 2015 (17) in Saudi Arabia (16.2%), but lower than other previous study in primary health care centers which ranged from 41.0% to 48.0% (16), and a study conducted by Fadare et al., 2015; in Nigeria (68.9%) (21).

Half of medications prescribed were in syrup form 355 (50.7%), suspension 112 (16%), while injection was the least prescribed form 13 (1.8%).

This low percentage of prescribing injection pattern in the hospital may be referred to awareness of prescribers about the problems associated with frequent use of injections in pediatrics. Injection's uses may be unsafe and could be accompanied with transmission of pathogenic organisms to the patients (22). Injection medication uses consider as one of main causes for both AIDs and hepatitis C infections in United State of America (23).

Fortunately; this study showed low percentage (1.8%) of pediatrics' prescribing injection in the outpatient department in hospital. This pattern of injection prescribing may reflect the awareness of physicians about the hazard associated with injections' uses. This percentage was lower than that reported by Awad et al, in Sudan, (24) and lower than a study by Eldalo, 2015 on adults in Saudi Arabia (11.5%) (17).

This study revealed that the antibiotics drugs were (19.2%). Public healthcare centers in Saudi Arabia was (44%) (15), also it was less than results from United Arab Emirates (21.4%), (25), and from Iran study (51%) (26). Overuse and/or

irrational use of antibiotics enhance cross-resistance (27), and enforced researchers to carry out many researches to control the irrational used of such medicines (28).

The limitation of our study is that, it was conducted in one hospital, although it is a major one. The author recommended a conduction of national study to be carried out in the Saudi Kingdom.

Conclusion

This study showed that appropriate prescribing pattern in pediatric outpatient department in the hospital for example; route of administration, antibiotics prescribing and mean number of drugs per prescription. There was missing in prescriptions' items. The author recommended implementation of institutional guidelines to improve prescribing practices. The researcher also recommended interventions of proven success and printed prescription format and follow up to complete the prescription elements. Encouraging the use of computerized system to ensure safe prescribing is also recommended. Quantification the impact of such interventions is another potential area for further researches.

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Motivational factors for physical activity influence the weekly frequency of practice in university students

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Abstract

The objective of this study was to determine whether motivational factors influence weekly frequency of physical activity practice. For this purpose, 109 students, 18-49 years (34% men and 66% women), responded to a questionnaire containing questions about the number of days per week they practiced physical activity and the Exercise Motivation Inventory EMI – 2. The sample was divided into two groups (G1: PA practice up to twice a week and G2: PA practice 3 or more times per week); the results indicated that the motives for practicing PA had significant effects in relation to gender [*Wilks's Lambda* = 0.706; $F_{(10)} = 4.170$; $p < 0.001$] and also in relation to the weekly frequency of physical activity practice (PA) [*Wilks's Lambda* = 0.69; $F_{(10)} = 4.937$; $p < 0.001$]. The men presented *Social Recognition* [$F_{(1.109)} = 5.694$; $p = 0.019$]; *Membership* [$F_{(1.109)} = 11.770$; $p = 0.001$] and *Rivalry* [$F_{(1.109)} = 12.079$; $p = 0.001$] as principal motivational factors while the women emphasized *Weight control* [$F_{(1.109)} = 13.106$; $p < 0.001$]. The results for the students in the G2 group for the following motives: *Fun and Well Being* [$F_{(1.111)} = 15.396$; $p < 0.001$]; *Membership* [$F_{(1.111)} = 8.367$; $p = 0.005$]; *Rivalry* [$F_{(1.111)} = 9.45$; $p = 0.02$]; *Weight control* [$F_{(1.111)} = 4.764$; $p = 0.031$] and *Health status* [$F_{(1.111)} = 9.225$; $p = 0.003$], were significantly higher in relation to the G1 group. The motives leading students to practice PA varied according to gender and number of times per week that PA was practiced which should be considered in PA promotion programs.

Key words: Physical activity; motivation; Gender Identity; Body Weight

Introduction

Physical inactivity is considered one of the most important risk factors for the development of non-communicable chronic degenerative diseases^{1,2}. According to the American College of Sports Medicine (ACSM), it is necessary for the practice of physical activity (PA) to promote energy expenditure of between 500 and 100 METs and, therefore, should be performed 20-30 minutes per day, 3-5 times a week, with a weekly accumulation of 75 minutes of vigorous PA or 150 minutes of moderate PA³ when appropriately evaluated and advised by a health professional. This document supersedes the 1998 American College of Sports Medicine (ACSM) The physical and mental benefits provided by PA practice within these recommendations are well documented in the literature⁴ including physicians, epidemiologists, exercise scientists, and public health specialists. This panel reviewed advances in pertinent physiologic, epidemiologic, and clinical scientific data, including primary research articles and reviews published since the original recommendation was issued in 1995. Issues considered by the panel included new scientific evidence relating physical activity to health, physical activity recommendations by various organizations in the interim, and communications issues. Key points related to updating the physical activity recommendation were outlined and writing groups were formed. A draft manuscript was prepared and

circulated for review to the expert panel as well as to outside experts. Comments were integrated into the final recommendation. PRIMARY RECOMMENDATION: To promote and maintain health, all healthy adults aged 18 to 65 yr need moderate-intensity aerobic (endurance, however, the level of physically active individuals remains below the recommended levels⁵.

In Brazil, a population survey (N = 142.533,480 people) demonstrated that one in five Brazilians do not practice any type of PA⁶. In addition, age, gender, race, geographical region, socioeconomic status and education are factors that seem to influence the level of PA practice⁶⁻⁹.

In university students, recent data has shown that only 47.4% of students met the PA practice recommendations and that the risk of incorporating sedentary habits increases significantly during the university period⁷. In contrast, students with higher levels of PA practice tend to maintain the pattern of PA longer, even after university^{10, 11} a high proportion indicated that they enjoy exercise (66.1%).

Some authors have reported that motivation appears to be a primary determinant of physically active behavior¹². Among the motivational theories related to PA practice, that of self-determination (TMA) proposed by Deci and Ryan¹³, is becoming more and more popular. In this model, motivation refers to that which puts the subject in action to accomplish something and is influenced by intrinsic and extrinsic aspects. Intrinsic motivation refers to factors that lead the subject to perform an action simply for the satisfaction it provides, while extrinsic motivation corresponds to the factors (motives) that cause an individual to perform an action on the basis of some consequence inherent in it¹⁴.

Although there are several instruments to measure the motivation of individuals in relation to PA practice, the best known for this purpose is probably the Exercise Motivation Inventory, EMI - 2¹⁵. Validated for the Portuguese language¹⁶, this instrument contains 51 items grouped into 14 motivational factors for PA practice. Studies which applied the EMI - 2 in Brazilian university students found that gender, age and socioeconomic and nutritional status were important determinants of the motivation for PA practice^{17, 18}.

However, to the best of our knowledge, there are no published studies which investigate whether

motivational aspects (intrinsic and extrinsic) interfere with the weekly frequency of PA practice of university students. We hypothesized that university students who practice PA at least three times a week, would have different motivations when compared to their peers who practice PA two or less times per week.

Thus, this study aimed to identify the key motivational factors for PA practice in a representative sample of students and investigate whether these factors can interfere with the weekly frequency of PA practice.

Methods

This is a descriptive cross-sectional study with a representative sample of 2447 university students, enrolled in the second semester of 2013. The reference population for the study included students from 13 undergraduate courses at a private university located in the South of the city of São Paulo, Brazil.

The sample selection procedures were determined to have 95% confidence, an estimation error of $\pm 8\%$ and a prevalence of 25% for all outcomes and the estimated sample size was 150 students. The sample was then recruited using the cluster sampling technique, having as a reference the number of students enrolled on the course. The inclusion criteria for this study were: being properly registered in the second semester of 2013 and being present in the classroom during the three data collection visits.

To determine the motivational factors, the EMI-2 was used. This questionnaire includes motivational factors (intrinsic and extrinsic) for PA practice and has been properly translated and validated for Brazilian young people¹⁶. The EMI - 2 consists of 51 questions divided into 10 motivational factors: Fun and Well Being, Stress Control, Social Recognition, Membership, Rivalry, Rehabilitation, Disease Prevention, Weight Control, Physical Appearance and Health Status. Each of the questions is presented according to a Likert scale of six points (0-5), where the minimum value is "completely untrue" and the maximum value is "very true".

The definition of the groups regarding the weekly frequency of PA was performed by means of two questions: "Do you currently practice any type of PA?" and in the case of a positive respon-

se, the second question: “How often on a weekly basis?”. Based on this, the groups were defined as those who practiced three or more days of physical exercise (≥ 3 days) per week and those who practiced 2 or less days (≤ 2 days).

The variables of age, gender, marital status and anthropometry (body weight and height) were self-reported¹⁹. The body mass index (BMI) was calculated by dividing the body mass (BM) in kilograms by the height (H) in meters squared ($BMI=BM/H^2$). These variables were used as descriptive and independent variables in the present study.

Data collection occurred in the month of September 2013, with the collaboration of students from the physical education course, previously trained to apply the research instrument. Therefore, the classrooms were selected and visited by the collaborating researchers who informed and clarified the objectives of the study to the university students. All the students who agreed to participate signed an informed consent form and received instructions on how to complete the EMI - 2 and other study variables.

The statistical treatment of the data was performed using SPSS statistics - version 21 (IBM Company, Chicago, IL). Initially the normality hypothesis was verified using the Kolmogorov-Smirnov test. As the data presented normal frequency distribution, parametric statistics were used by calculating the mean and standard deviation, as well as the relative frequency for the categorical variables. The Student t test for independent samples was used to compare the means and the Pearson's chi-square test to compare the proportions according to the weekly frequency of PA. Subsequently, to make comparisons between

the strata formed, multivariate analysis of variance (MANOVA) was used, with the ten motivational factors as the dependent variables and the weekly frequency of exercise as the independent variables. When a significant effect of the independent variables on the dependent variables was found, ANOVA analysis of variance was utilized. The significance level of 5% ($p < 0.05$) was adopted for all analyzes.

All protocols were reviewed and approved by the local Committee for Ethics in Research, opinion no. 930.354.

Results

Of the 150 university students selected for the sample, 31 refused to participate and 10 presented incomplete data. Thus, the final sample was composed of 109 university students, 72 (66%) female. The age of the students ranged from 18 to 49 years with a mean of 27.04 ± 7.59 years. With regard to marital status, 67% were single, 28% married or cohabiting, 4% separated and 1% widowed. With regard to undergraduate courses, similar proportions of close to 25% were distributed in four areas of study: human sciences, legal/social, exact sciences and health.

Considering all the students in this study, 51% ($n = 56$) were in the group ≥ 3 days, and the remaining 49% ($n = 53$) were divided between those who did not practice and/or practiced some type of PA less frequently than 3 days a week.

The demographic and anthropometric variables did not present significant differences between the groups that practiced PA more or less times per week (Table 1).

Table 1. Demographic and anthropometric characteristics of the university students, according to weekly frequency of PA practice

Variables		Weekly frequency of physical activity practice		p-value
		≤ 2 days (n=53)	≥ 3 days (n=56)	
Age (years)		26.3 ± 7.3	27.8 ± 7.9	0.304
Gender	Male	15 (27%)	23 (40%)	0.164
	Female	40 (73%)	35 (60%)	
Marital status	Cohabiting	40 (73%)	41 (71%)	0.810
	Not cohabiting	15 (27%)	17 (29%)	
Anthropometric	Body mass (kg)	65.3 ± 13.2	67.2 ± 13.9	0.475
	Height (m)	1.67 ± 0.07	1.69 ± 0.09	0.498
	BMI (kg/m^2)	23.1 ± 3.5	23.3 ± 3.3	0.774

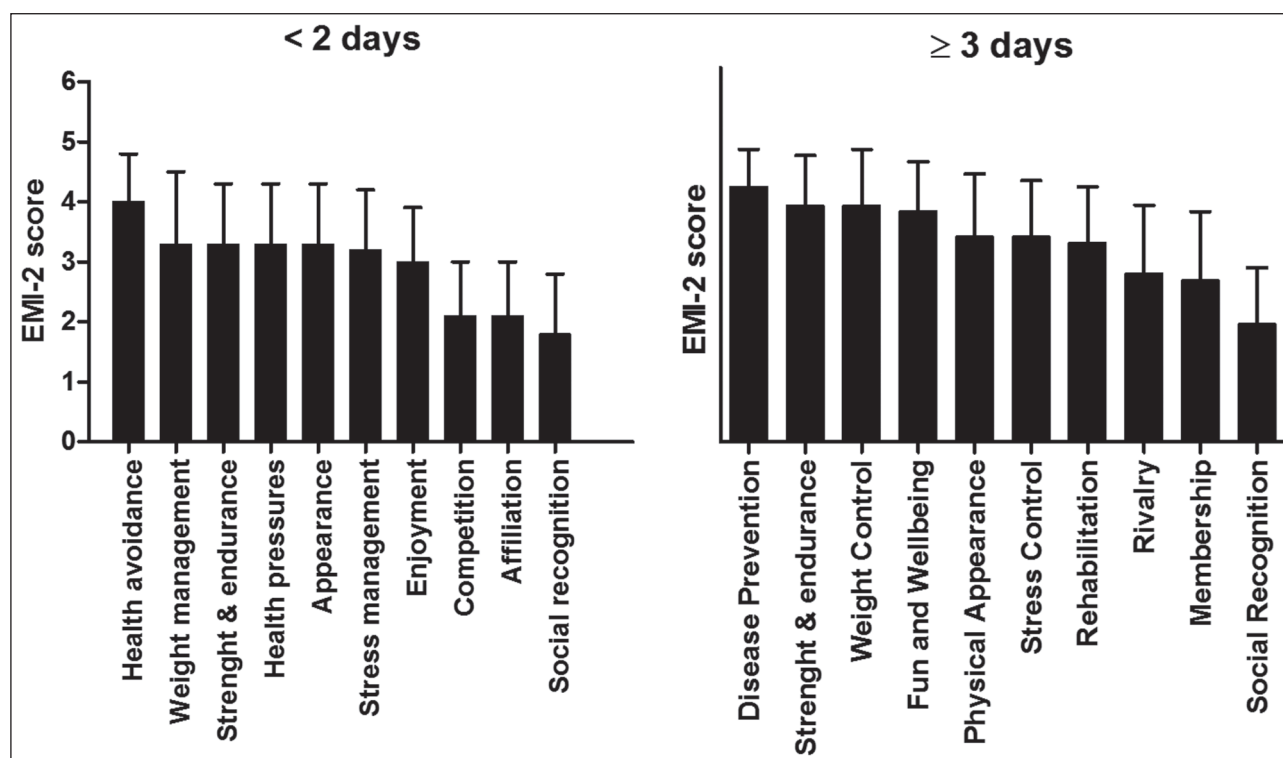


Figure 1. Hierarchical Order of motivational factors associated with practicing physical activity in university students, according to the weekly frequency of practice

Table 2. Association between motivational scores and gender, according to the weekly frequency of practice of physical activity in university students.

Dimension	Gender	Weekly frequency of physical activity practice		WFPA	Gender	WFPA *Gender
		≥3 days	≤ 2 days			
Fun and Wellbeing	M	4.0 (0.8)	3.1 (0.9)	12.961	1.855	2.273
	F	3.5 (0.8)	3.1 (0.9)	p<0.001	0.176	p=0.135
Stress Control	M	3.4 (0.9)	2.9 (0.9)	0.458	0.231	2.295
	F	3.2 (0.9)	3.3 (1.0)	p=0.500	p=0.632	p=0.133
Social Recognition	M	2.1 (0.8)	2.2 (1.4)	0.012	8.425	0.530
	F	1.7 (0.7)	1.6 (0.7)	p=0.913	p=0.005	p=0.468
Membership	M	3.1 (1.1)	2.5 (1.0)	4.889	12.545	0.435
	F	2.2 (1.0)	1.9 (0.8)	p=0.029	p=0.001	p=0.511
Rivalry	M	3.3 (1.0)	2.4 (0.9)	8.402	12.508	3.598
	F	2.2 (0.9)	2.0 (0.9)	p=0.005	p=0.001	p=0.061
Rehabilitation	M	3.2 (0.8)	3.1 (0.9)	0.075	1.121	0.773
	F	3.2 (1.0)	3.4 (1.0)	p=0.784	p=0.292	p=0.381
Disease Prevention	M	4.2 (0.5)	3.8 (0.8)	1.466	0.706	4.358
	F	4.0 (0.7)	4.1 (0.8)	p=0.229	p=0.403	p=0.039
Weight control	M	3.6 (0.9)	2.5 (0.9)	9.009	12.978	5.133
	F	3.9 (0.9)	3.7 (1.1)	p=0.003	p<0.001	p=0.026
Physical Appearance	M	3.4 (1.0)	3.3 (0.9)	0.06	0.55	0.106
	F	3.2 (0.9)	3.3 (1.0)	p=0.807	p=0.460	p=0.746
Health Status	M	4.0 (0.8)	3.5 (1.1)	6.678	2.332	0.106
	F	3.7 (0.8)	3.3 (1.0)	p=0.011	p=0.130	p=0.752

WFPA = Weekly Frequency of Physical Activity

The hierarchical order of the motivational factors for PA practice according to the weekly frequency of PA is shown in Figure 1.

The multivariate analysis revealed a significant effect of motivational factors in relation to gender [*Wilk's Lambda* = 0.706; $F_{(10)} = 4.170$; $p < 0.001$] and also in relation to the weekly frequency of physical activity practice (PA) [*Wilks's Lambda* = 0.669; $F(10) = 4.937$; $p < 0.001$].

For the ≤ 2 days group, three motivational factors presented lower average scores than the midpoint (2.5): Membership (2.1 ± 0.9), Rivalry (2.1 ± 0.9) and Social Recognition (1.8 ± 1.0). However, for the ≥ 3 days group, only Social Recognition (1.9 ± 0.8) presented an average score of less than 2.5.

The motivational factor scores were analyzed according to the strata of weekly frequency of PA practice and gender (Table 2).

Male individuals presented higher scores for the indicators: Social Recognition ($F = 8.425$; $p = 0.005$), Membership ($F = 12.545$; $p = 0.001$) and Rivalry ($F = 12.508$; $p = 0.001$) while the females presented higher scores for Weight Control ($F = 12.978$; $p = 0.001$).

Regarding the weekly frequency factors, the Health Status ($F = 6.678$; $p = 0.011$), Fun and Well Being ($F = 12.961$, $p < 0.001$), Weight Control ($F = 9.009$; $p = 0.003$), Membership ($F = 4.889$; $p = 0.029$) and Rivalry ($F = 8.402$; $p = 0.005$) scores were higher in individuals with a PA frequency of ≥ 3 days per week.

The multivariate analysis identified a significant interaction effect between weekly frequency of PA and gender for Health Protection ($F = 4.358$; $p = 0.039$) and Weight Control ($F = 5.133$; $p = 0.026$).

Discussion

The present study aimed to verify whether motivation of university students of both genders to practice PA influenced the weekly frequency of practice.

The current study presented important limitations related to the separation of the groups according to the weekly frequency of PA practice, since the information was self-reported and therefore no instrument validated for this purpose was used. Despite this limitation, it is worth noting that this

type of data collection is in accordance with the methodology presented in previous studies on this topic²⁰ so the interpretation of the results presented in this study was not compromised.

The main results of this study were: i) Prevention of Diseases and Weight Control were the motivating factors for the practice of PA, independent of gender and weekly frequency of PA practice; ii) Membership, Rivalry and Social Recognition were the motivating factors that had the lowest mean scores in relation to the midpoint in the group who practiced PA two or less days per week, while for the group which practiced PA three or more days a week, with the exception of Social Recognition which presented an average score below the midpoint, all other motivational factors (i.e., Disease Prevention, Health Status, Weight Control, Fun and Wellbeing and Membership) presented scores higher than the midpoint; iii) for male subjects, Social Recognition, Membership and Rivalry were the most important motivating factors for the practice of PA while Weight Control was found to be the greatest motivating factor for women.

The hierarchical organization of the motivational factors of the university students in the present study is similar to the university students in the study by Guedes et al.¹⁷. In addition, the findings of this study are consistent with those presented by other studies on motivation and PA, which point to preventive health care, concern for physical condition and weight control as the principle motivating factors for PA practice in university students²¹⁻²³.

In the present study, it was observed that female individuals who practiced PA ≤ 2 times/week were more concerned with body weight control than men of the same group and individuals who practiced PA ≥ 3 days/week. Previous studies have also pointed to gender differences in motivational factors for aesthetic purposes. Guedes et al.¹⁷, for example, also found that female individuals value Weight Control and Physical Appearance more than males. Taken together, the findings of several studies indicate that in fact there seems to be a trend for women who practice PA to value motivational factors related to body aesthetics more highly than men.

Identification of the motives leading to PA practice may be important to guide active lifestyle promotion actions for university students, since

according to Sousa and Nahas²⁴; PA practice may decrease during the period that young people are studying at university. Moreover, it seems that the majority of university students abandon PA practice to devote more time to study and work²⁵.

In summary, the findings of this study indicate that the motivational factors for PA practice in university vary according to gender and the weekly frequency of practice. Based on these results it is recommended that public policy programs for promotion of PA in universities consider these motivational characteristics in order to propose activities which reach the expectations of the students.

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An aesthetic intention scale: using the health-belief model to predict whether hospital employees will choose to undergo non-therapeutic cosmetic procedures

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Abstract

Objectives: To develop a scale that predicts whether hospital employees will choose to undergo non-therapeutic cosmetic procedures and incorporates a four-quadrant report card.

Methods: Parallel analysis and exploratory factor analysis were used to determine the number of factors to retain. Multiple regression analysis was used to identify the key factors associated with aesthetic intention. A visual representation of the aesthetic intention was then prepared.

Results: The 12-item aesthetic intention scale has two characteristic features: subscales of perceived susceptibility and perceived need for cosmetic improvement. The two factors were evidence of elements that influence aesthetic intention. The report card can provide cosmetic surgeons and cosmetic surgery clinics with a tool for judging how likely one population subgroup, compared with others in a plot, is to choose non-therapeutic cosmetic procedures.

Conclusions: The aesthetic intention scale can be used to predict whether hospital employees will choose to undergo non-therapeutic cosmetic procedures.

Key words: aesthetic intention scale, health-belief model, undergo non-therapeutic cosmetic procedures.

Introduction

Cosmetic surgery has become an accepted part of every developed nation's culture [1]. The cosmetic surgery industry has recently become a hot business model. According to a March 2009 American Society of Aesthetic Plastic Surgery

report[2], the number of cosmetic (human enhancement intervention) surgeries and non-therapeutic nonsurgical cosmetic procedures in America exceeded 10 million in 2007 and was 1.6 times higher than in the previous 10 years. The non-therapeutic nonsurgical cosmetic procedures increased 2.3 times between 1997 and 2007. In 2007, expenditures on cosmetic procedures were nearly 120 billion US dollars per year. The top three surgical procedures were breast augmentation (n = 355,671), liposuction (n = 341,141), and eyelid shaping (n = 195,104). The top two non-therapeutic nonsurgical cosmetic procedures were on a botulinum toxin A (Botox®; Allergan) injections (n = 2,464,123) and laser hair removal (n = 2,464,123).

Another report released by ASAPS in 2005 [3] showed that the number of non-therapeutic cosmetic procedures has been increasing for most members of ASAPS. The medical business that provides non-therapeutic cosmetic procedures is also booming in Taiwan. The value of beauty-related products and cosmetics, with its current 37-129% growth rate, has reached 1.5 billion US dollars annually; medical cosmetics account for 5% of that, or around 75 million US dollars each year. For example, about 240 thousand people with crow's feet buy about 30 thousand bottles of Botox for injections to eliminate them. The total annual expenditure for these injections is more than 300 thousand US dollars.

Because the number of patients undergoing non-therapeutic cosmetic procedures has grown in recent years, the number of physicians providing these procedures has also grown. Many people are focused on their physical appearance and how

others see them, and, even though these procedures are not covered by Taiwan's National Health Insurance, they are apparently concerned enough to pay for them out-of-pocket, despite the recent economic recession. In her bestselling critique of the American media's and popular culture's fixation with an ideal of physical beauty virtually unattainable by the average American woman, Naomi Wolf [5] railed against "the self-inflicted violence of cosmetic surgery". Because of the constant media bombardment of these images of beauty, more women especially have become more concerned about what they look like in the eyes of others. Sarwer et al. [6] reported that more than 45% of surveyed respondents agreed to medical cosmetics to make their body appearance better and boost their self-confidence. Litner et al. [7] reported that 93 patients who underwent elective cosmetic facial surgery expressed perioperative satisfaction because of an increase in their quality of life (QoL).

How to accurately target the cosmetic surgery market is an important and essential task for non-therapeutic procedures in a hospital. We used the Health Belief Model (HBM) [8] to construct an aesthetic intention scale that predicts a person's intention and action on cosmetic behaviors that can be used as a non-therapeutic cosmetic procedure marketing strategy.

The HBM assumes that all health-related (i.e., medical, whether prophylactic, therapeutic, or non-therapeutic but elective and cosmetic) behaviors are affected by two factors [9]: (a) the value of avoiding disease or of recovering one's health status, and (b) the expectation of preventing disease, and, for those desiring non-therapeutic cosmetic procedures, the intention of pursuing beauty to improve their self-confidence [6] and QoL [7]. Janz et al. [10] compared the development of the HBM before and after 1974. The model includes three types of behaviors: preventing ill health, the patient role, and utilizing medical resources. It also includes four variables of self-perception to explain the HBM: perceiving (i) disease, (ii) serious adversities, (iii) self-beneficial actions, and (iv) barriers to action. The HBM has been explained in different ways at different times, which caused it to provide different predictions. The self-perception of disease was primary before 1974. Barriers to action replaced it between 1974 and 1984. Self-per-

ception of disease was better for predictions about preventing ill health than about the patient role. Self-beneficial action was better for predictions about the patient role than for predictions about preventing ill health. Self-perception of serious adversities was strongly associated the patient role, which provided the least predictive power [10].

Because one self-perception barrier to action is the burden of being able to pay cosmetic surgery expenses out-of-pocket, different price combination strategies (e.g., discounts or installment payments) can be offered to potential clients. Only the other three self-perception variables of the self-perception of disease, serious adversities, and self-beneficial action need be dealt with here. The present study aimed to (a) develop an aesthetic intention scale; (b) explore the factors affecting the aesthetic intentions (e.g., age, gender, education level, job type, marital status, annual disposable income, and the scaling scores); (c) provide cosmetic surgeons an easy-to-understand graphic that delineates the potential for clients in any targeted population.

Methods

1. Data sources

(1) Designing a scale

Based on the literature [8-10] about the HBM, four medical and marketing experts in the study hospital designed 4 items on each of the three self-perception variables of conscious disease, serious adversities, and self-beneficial action constituting a 12-item questionnaire with 5-point Likert-type answers (from *strongly disagree* to *strongly agree*). In addition, two items [#13: I am now very willing to undergo non-therapeutic medical cosmetic procedures; #14: I am considering undergoing non-therapeutic medical cosmetic procedures in the coming year] were added to the questionnaire to survey to the respondents' intentions about acting on their desire for cosmetic procedures within the coming year. This study was approved and monitored by the Research and Ethical Review Board of the Chi-Mei Medical Center.

(2) Sampling and dispatching

There are approximately 3,000 employees in the studied hospital. When setting the refusal to respond rate to 40% and standard error range to

$\pm 5\%$, we determined that the minimum feasible sample size for drawing any valid conclusion was 341. After considering that some employees were not working at the campus and that some would be absent for a variety of reasons during the survey period, we finally sent questionnaires to a random sample of 484 in the 56 working divisions of the hospital.

2. Data analysis

(1) The number of factors to retain

When a set of items is designed to measure the same construct (e.g., intention or the probability of acting on an intention) referring to the Health Belief Model (HBM) [8], item scores are often summed to represent the level of the construct. This summation method assumes that all items contribute equally to the construct and that all items are substantially related to the common construct. Otherwise, the summation score is meaningless and the assumptions are problematic [11].

Exploratory factor analysis is often used to examine whether items measure a common construct in social science. In this tradition, we used Kaiser's [12] eigenvalue-greater-than-one rule or Cattell's [13] scree plot test to determine the number of factors (domains or dimensions). Empirical research [14, 15] shows that parallel analysis (PA) [16] is one of the most accurate ways to determine the number of factors. Item factor loading (roughly similar to the correlation coefficient of the summation score of a scale) was set to > 0.4 . A scale was considered reliable when Cronbach's α was > 0.7 .

(2) Factors influencing aesthetic intention and action-taking

All the socio-demographic independent variables (e.g., age, gender, educational level, job type, marital status, work tenure, whether required to interact with patients and their families, and how much disposable income they had) were included in the questionnaire to predict their intention to undergo non-therapeutic medical cosmetic procedures and their plans to act on the intention with the coming year (items #13 and 14, respectively) using a single regression analysis. Significance was set at $p < 0.05$ to extract the potential influential factors and then combined with the domain summation of the aesthetic intention scale to screen

out the final influential factors using multiple regression modeling.

(3) Programming a visual representation aesthetic intention scale

If the number of factors to retain includes more than one domain of an underlying latent trait, a visual representation can then be plotted with two axes to show, using the # sign, the individual respondent's intention to undergo non-therapeutic medical cosmetic procedures.

The individual respondent's total score was converted to a percentage score [$p = X/(5 \times L)$], where X is the total score in the subscale and L is the number of items in the subscale [17]. For example, a respondent with a total score of 15 on a 6-item subscale will have a p score of 0.5, because $X = 15$ and $L = 6$. A p score centered around zero was then converted to p^* using [$p^* = (p - 0.5) \times 8$], and then given a range from -4 to $+4$ to cross-classify respondents into the four exposure groups: (i) strong intention in quadrant I; (ii) low intention in quadrant III; and vague (iii) vague intention in quadrants II and IV. The number of respondents is shown for each spot (e.g., 1 for 1, A for 10, and F for 15, etc.). The diagram is expected to provide knowledge of the overall probability of how many members of the study population plan to act on their intention to undergo non-therapeutic medical cosmetic procedures by using the ratio of the count in quadrant I to the total sample size.

3. Statistical software

We used multiple regression and χ^2 tests in this study with MedCalc for Windows 9.5.0.0 (MedCalc Software, Mariakerke, Belgium) and SPSS 15.0 (SPSS Inc., Chicago, IL).

Results

There were 290 (60.5%) valid responses to the questionnaire.

Socio-demographic statistics

Participants worked at one of four types of hospital job: physician, nurse, medical technician, and administrator. Most (92.2%) of them were not supervisory staff. The plurality (44.0%) of

the participants were nurses. Most (52.6%) were frequently required to interact with patients, patients' family members, and visitors. One hundred sixty-seven (57.7%) had monthly disposable incomes under US\$300. χ^2 tests showed no significant differences between the 290 participants and the full staff of the hospital (Table 1), which suggested that the participant sample adequately representative of the entire staff of the hospital.

Exploratory factor analysis

Parallel analysis was used to examine two factors: they accounted for 69.6% of the explained variance (Figure 1). Item 10 (I do my best to improve my appearance) shows the least factor loading of 0.55 (Table 2), which indicates that the former 5 and latter 7 items can constitute two underlying latent constructs. Of the 12 items, only two (6 and 10) have a high loading (> 0.4) in both domains, which implies that these two items have a significant association with the study factors.

Cronbach's α is 0.90 and 0.89, respectively, for the two subscales.

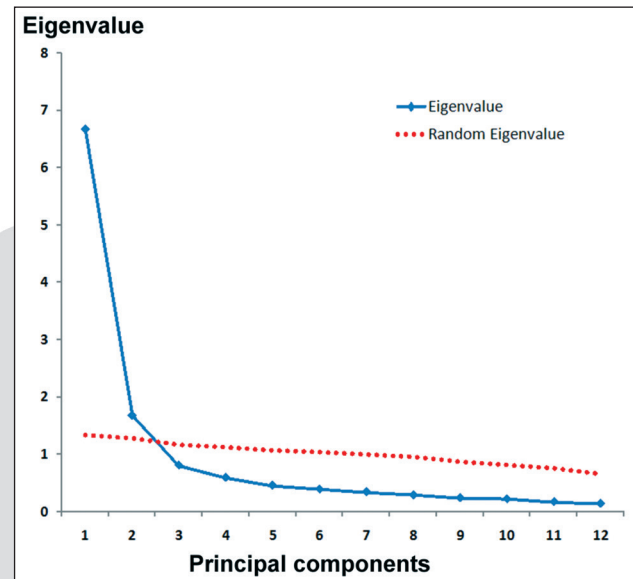


Figure 1. The number of factors extracted by parallel analysis

Table 1. Demographic data of associations between sample sizes and study variables

Variable	Total Staff	Sample	Valid responses	χ^2
	N = 3005 (%)	N = 331 (%)	290 (%)	p-value
Gender				
Female	2283 (76.0)	252 (76.1)	228 (78.6)	0.600
Male	722 (24.0)	79 (23.9)	62 (21.4)	
Job type				
1-Physician	458 (15.2)	50 (15.1)	33 (11.4)	0.764
2-Nurse	1322 (44.0)	145 (43.8)	131 (45.2)	
3-Technician	768 (25.6)	84 (25.4)	77 (26.5)	
4-Administrator	457 (15.2)	52 (15.7)	49 (16.9)	
Age				
18-25	295 (9.8)	28 (8.5)	25 (8.6)	0.966
26-35	1567 (52.1)	175 (52.9)	156 (53.8)	
36-45	835 (27.8)	88 (26.6)	78 (26.9)	
46-55	246 (8.2)	31 (9.4)	25 (8.6)	
≥ 56	62 (2.1)	9 (2.7)	6 (2.1)	
Work Tenure				
< 1 year	167 (5.6)	18 (5.4)	15 (5.2)	0.989
1-3 years	646 (21.5)	69 (20.8)	56 (19.3)	
4-8 years	824 (27.4)	90 (27.2)	81 (27.9)	
9-14 years	827 (37.5)	89 (26.9)	86 (29.7)	
≥ 15 years	541 (18.0)	65 (19.6)	52 (17.9)	
MWT (SD)	8.69 (6.7)	8.38 (6.8)	8.84 (6.5)	0.628
Mean age (SD)	34.45 (8.1)	34.92 (8.3)	34.22 (7.7)	0.726

MWT, Mean work tenure

Table 2. Exploratory factor analysis on the 12-item aesthetic intention scale

The Aesthetic Intention Scale		Factor loading	
No.	Item	Factor 1	Factor 2
1	I pay attention to whether my appearance has changed (e.g., scars)	0.87	
2	I am very concerned about how others view my appearance	0.79	
3	I worry about whether others think I look strange	0.75	
4	I care about how other people look	0.87	
5	I am very concerned about the appearance of a defect (e.g., scars)	0.72	
6	The appearance of a defect will affect my self-confidence when facing others	0.48	0.68
7	The appearance of a part of a defect will affect my personal relationships		0.84
8	The appearance of a defect often makes me nervous when facing others		0.79
9	My aesthetic appearance affects my achievement in the workplace		0.76
10	I do my best to improve my appearance	0.51	0.55
11	Improve my appearance is an urgent need for me		0.76
12	My friends and relatives or my supervisor suggested that I should do something to improve my appearance		0.80
13	I am now highly willing to undergo non-therapeutic medical cosmetic procedures		
14	In the coming year, I am considering undergoing non-therapeutic medical cosmetic procedures		

Factors influencing aesthetic intention and action

Univariate regression analysis done on item 13 (responding to the intention) for the independent variables of age, gender, education level, job type, marital status, work tenure, whether interacting with patients' families or other visitors, and amount of disposable income. Only age and gender were significant ($p < .05$) to predict aesthetic intention. Multiple logistic regression analysis of age and gender combined with the summation scores of the two subscales to predict aesthetic intention showed that only gender was not significant ($p = 0.438$) in the model. The 21-25-year-old age group had the highest scores in intention and action-taking for non-therapeutic medical cosmetic procedures (Figure 2).

These remaining three variables (age and the two subscales) were further analyzed using multiple regression to predict aesthetic intention. Age was nonsignificant ($p = 0.059$). Finally, only the two subscales were significant to predict aesthetic intention and action-taking. The prediction formulas are in Equations (1) and (2), respectively. The weights of Factor 1 are higher than the Factor 2 in both Equations.

$$\text{Aesthetic Intention} = 0.98 + 0.102 \times \text{Factor 1} + 0.03 \times \text{Factor 2}, \quad \dots \quad (1)$$

$$\text{Action-Taking} = 1.129 + 0.085 \times \text{Factor 1} + 0.03 \times \text{Factor 2}, \quad \dots \quad (2)$$

Overall aesthetic intention

To determine the overall aesthetic intention for the full staff of the hospital, we plotted a four-quadrant diagram of the participant dispersion cross-classified based on the two subscales (Figure 3): QI ($n = 129$) = 45.1%, QII ($n = 48$) = 16.4%, QIII ($n = 94$) = 32.1%, and QIV ($n = 19$) = 6.5%. We found that the aesthetic intention for the participants was 44.5% (129/290), which can be used for future comparisons. In addition, the results for a specific examinee can be positioned using the # signal. Examinees with a high intention of undergoing non-therapeutic medical cosmetic procedures are in QI. This information can be used for cultivating potential clients who have an "aesthetic intention" and will probably act on that intention.



Figure 2. Predicted scaling scores of intention and action-taking for the age group

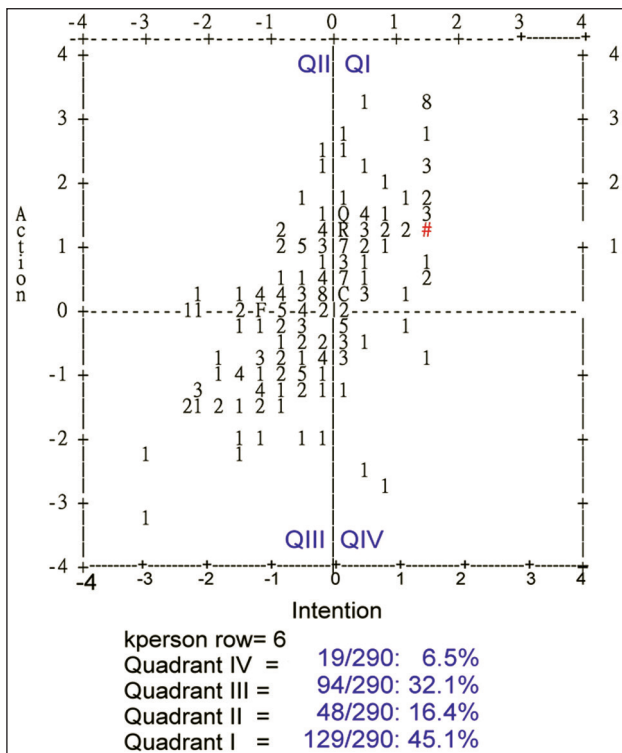


Figure 3. A respondent (No. 6) with a label # scattered in the plot

Discussion

In the present study we found that the as-developed 12-item aesthetic intention scale reveals two underlying latent trait factors-subscales of perceived susceptibility and perceived need for cosmetic improvement-composed of three self-perception variables: (a) the value of avoiding disease or of recovering one's health status, (b) the avoidance of adverse side-effects, and (c) the expectation of preventing disease, and, for those desiring non-therapeutic cosmetic procedures, the intention of pursuing beauty to improve their self-confidence and QoL. The domain of consciously avoiding adverse side-effects has been grouped into other two domains, an unexpected finding. However, when comparing it with the Janz findings [10] about the development the HBM model before and after 1974, we found that the value of avoiding disease or of recovering one's health status was a much better predictor than was the desire to avoid adverse side-effects, as was the intention of pursuing beauty to improve self-confidence and QoL. These results complied with our findings about the power of our scale. We also found that the summation scores of the two subscales are the key factors

affecting aesthetic intention, and that a visual representation which the ratio of the counts in QI to the total survey sample size discloses the size of the potential market for non-therapeutic medical cosmetic procedures in a surveyed population.

Study limitations

A complete consists of the following: perceiving (i) disease, (ii) adverse side effects, (iii) self-beneficial action, (iv) barriers to action, and (v) cues to action. We found that the latter two can be replaced by the former three, which reduces a respondent's burden in answering questions. The reason we explored only the intention to undergo non-therapeutic medical cosmetic procedures and did not emphasize barriers and cues to action is that there are existing marketing strategies (such as discounts and installment payment plans) to reduce their payment burdens.

The studied sample population was from a hospital in Taiwan. The findings cannot be generalized to other types of worksites in other countries without confirmation by other studies at other types of workplaces in other countries.

Psychometrics and applications

In conventional univariate analysis, most of us focus our study on estimating population parameters and making inferences about a population. In the psychometric field, we prefer to understand personal characteristics. How to estimate them requires measures of ability, performance, and satisfaction level. Fortunately, modern testing theory, represented by item response theory, which is different from classic testing theory, has been developing rapidly in recent years [11, 18-20]. Applying Rasch analysis [17, 21-24] to examine the scaling appropriateness [20, 25] and differential item functioning [18, 26, 27] on the study scale is expected in future.

Future studies are encouraged to use item response theory-based Rasch rating scale models [21, 22] to test model-data fit. A visual representation such as that provided by the scatter plot in Figure 3 is recommended for future psychological studies for easily observing cross-classified persons dispersed in quadrants and for the overall market potential of a study population.

Conclusion

The aesthetic intention scale can be used to predict aesthetic intention and the probability of acting on that intention. A visual representation (a four-quadrant scatter plot) can highlight the overall market potential and each individual respondent's potential for acting on a desire to undergo non-therapeutic medical cosmetic procedures.

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Presentation of district nurse training and advanced training needs in order to provide nursing care activities within district nursing

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Abstract

Objectives: In 2011, the Chamber of Health-care and Midwifery Services of Slovenia – the Association of Professional Associations of Nurses, Midwives and Health Technicians, Slovenia, issued a document entitled *Nursing Care Activities in District Nursing*, which defines the most common activities that are carried out in the clinical practice of nursing care within district nursing, and the issues surrounding the provision of nursing care within district nursing along with an illustration of the needs for nursing care providers in the said field. The purpose of the research was to establish in what way district nurses acquire knowledge/skills with regard to the activities which are specified in the said document as additional skills and are to be acquired by each district nurse for the sake of high quality job performance.

Methods: The data were gathered using a structured questionnaire. The sample included 100 district nurses from the regions of Maribor, Celje and Ljubljana. We applied descriptive statistics. Interdependence was analysed by means of the t-test for analysing differences and the Pearson's correlation coefficient (r) for analysing correlation.

Results: The acquired results showed that there are certain nursing care activities within district nursing where additional knowledge and skills are required: urine collection from a nephrostomy tube (2.86), bladder irrigation after cystostomy catheterization (2.71), memory training exercises (2.70), blood drawn from central venous catheters (2.66), filter replacement in an epidural catheter (2.34) and flushing of an intravenous valve (2.30). Compared to graduate district nurses, district nurses with secondary school diplomas placed greater emphasis on acquiring additional skills regarding the activities where additional skills were required

($t = 6.633$ $\alpha=0.05$; $p_{\alpha}=0.000$). District nurses with 31 to 35 years of service preferred to acquire new knowledge/skills in the following ways: consulting colleagues in their respective organization ($t=-3.308$ $\alpha=0.05$; $p_{\alpha}=0.001$), consulting colleagues operating in other district nursing organizations ($t = - 3.053$ $\alpha=0.05$; $p_{\alpha}=0.002$) and consulting doctors ($t= - 2.547$ $\alpha=0.05$; $p_{\alpha}=0.011$).

Conclusions: Education, training and advanced training of district nurses is necessary for the growth and development of society. The results can provide a basis for improving programmes which are aimed at their training and advanced training.

Key words: training, advanced training, graduate nurse, district nursing.

1. Introduction

District nursing represents a special field of nursing care, which deals with individuals, families and the local community throughout all periods of health and illness. It is organised as an independent service or an organisational unit within primary healthcare. Nursing care within district nursing is implemented by graduate nurses; it can also be carried out as an independent activity (through concessions), but it is included in the public healthcare network (1).

The tasks of district nurses involve ascertaining the patient's needs for health assistance, i.e. nursing care, at their home, planning nursing care interventions, implementing the said interventions and evaluating the objectives achieved. They also give advice regarding a healthy lifestyle and habits, and warn about the risk factors which may endanger the health of individuals or family members. Furthermore, they estimate what individuals or family members are (un)able to do for themselves and at what point that changes. They also treat

individuals, families and communities from the health and social aspect, acting as coordinators of all types of home help.

Due to the manner and location of its practice, district nursing represents the part of primary healthcare which can identify and respond to social changes in the fastest and most effective way (2). The role of district nursing is a relevant topic as the full extent of the general crisis and the resulting aggravation of the social situation can generally be seen only behind closed doors, at home, where the district nurses have access (3).

In 2011, the field of district nursing received the long-awaited document entitled *Nursing Care Activities in District Nursing* which defines a series of nursing care activities within district nursing. They include nursing care activities which are not frequent in practice or are highly specific to a certain field. In terms of illness incidence rates, the population may be vastly different and specific from one region to another. District nurses must implement these activities in an excellent and flawless manner. Provided there are suitable legal regulations in place, a graduate district nurse may take over specific additional activities once they have the suitable additional skill set. This must be harmonized with the suitable work norm – 2400 inhabitants per one graduate district nurse (4). Within the entire process of district nursing, treatment is aimed at individuals, their families and the community. The area of work includes the health and social treatment of individuals, families and communities, nursing care for pregnant women, neonatal mothers and newborns at home, as well as nursing and medical care of patients in their homes. Nursing care activities in district nursing are based on activities, interventions and collaboration (team work). They are divided in line with Virginia Henderson's 14 nursing care activities. The descriptions of certain nursing care activities within district nursing contain an additional note that further skills are required in order to implement them. Such activities include (1) administering a cleansing enema, colostomy irrigation, bladder irrigation after cystostomy catheterisation, memory training exercises, communication with aphasic patients, therapeutic touch, elastomeric pump replacement, flushing of intravenous valves, preparing and administering intravenous infusion

solutions and medicines via an intravenous valve, filter replacement in an epidural catheter, blood drawn from central venous catheters, urine collection from a nephrostomy tube, dressing the skin affected by radiation dermatitis, and therapeutic conversation with a patient.

In addition to expertise, district nurses are expected to possess positive character traits such as compassion, understanding, and kindness etc. These traits enable them to listen thoroughly, hear their patients and know how to guide them professionally, thus achieving the highest possible level of trust and self-sufficiency. It is important for them to offer the patients the amount of help they actually need as this helps preserve their independence and reduces the feeling of being dependent on others (5). The research (6) revealed how important it is for nurses and their superiors to devote more time to the establishing of interpersonal relationships in clinical practice, and to the education of nurses at colleges and universities. It is vital to identify the positive characteristics that are relevant for the nurse-patient relationship, and to define them clearly at the organisational and normative level (7). The activities of district nurses are focused on studying and searching for ways to implement current health-related findings within efforts for a healthy life in order to boost and enhance people's health (8). District nurses are aware of the fact that training and advanced training are essential when it comes to improving the quality of their job performance and to meeting the new professional standards.

2. Methodology

2.1 Research purpose and objectives

The purpose of the research was to establish in what way district nurses acquire skills with regard to the activities specified in the *Nursing Care Activities in District Nursing* (2011) document as additional skills to be mastered by each district nurse for the sake of high quality job performance.

The objectives included researching the following:

- Do the opinions of district nurses on the significance of acquiring skills differ greatly in terms of their respective educational levels?

- Are there differences between district nurses with secondary school education and graduate district nurses in terms of evaluating the need for additional skills defined within the 2011 *Nursing Care Activities in District Nursing*?
- Does the satisfaction with the selection of the most frequent methods of acquiring skills for nursing care activities, where such additional skills are needed by the district nurses, depend on the years of service?
- Are there statistically significant differences in defining the best types of acquiring skills in district nursing care activities between district nurses who have attained different educational levels?
- Is there a correlation between acquiring additional, new skills at the primary and secondary level, and the years of service of district nurses?

2.2 Methods

We applied descriptive statistics. Interdependence was analysed by means of the t-test for analysing the differences and Pearson's correlation coefficient (r) for analysing the correlation. We also used a questionnaire which was divided into three sections. The first section was intended to compile the respondents' personal information, while the second section was about the skills required with certain nursing care activities and the skills acquired up to that point, both of which the district nurses need. The third section referred to the organisation of training and additional training for district nurses in their working environments.

The questionnaire's reliability was confirmed by Cronbach's Alpha (0.73), while its objectivity was ensured mainly with the chosen techniques of gathering data (closed-ended questions, Likert scale of responses, assessment scale), which limit subjective interpretation. Based on the above-referenced facts, it is safe to say that the questionnaire was a methodologically suitable instrument (9, 10).

2.3 Sample

The research was conducted among randomly chosen district nurses ($N=100$) employed at community health centres in the Slovenian regi-

ons of Maribor, Celje and Ljubljana. The respondents included 98 (98.0%) women and 2 (2%) men. Most respondents (33.9%) were 41 to 50 years old, while 30.4% of them were 31 to 40 years old or 51 and over. The lowest percentage of respondents (5.4%) belonged to the 20–30 age brackets. The majority of respondents (57.1%) had attained a high education level. As many as 21.4% of respondents had completed secondary school, while 16.1% of them had completed higher vocational school and 5.4% of them had attained their master's degrees. The highest percentage of respondents (19.6%) had worked in district nursing for 6 to 10 years, 16.1% of them had worked in the field for 16 to 20 years or for 11 to 15 years, while the lowest percentage of respondents (3.6%) had worked in district nursing for 36 to 40 years.

3. Results

3.1 Acquiring skills in district nursing at an individual level

We were interested in how skills are acquired by individuals in district nursing. According to the respondents, individuals can best acquire skills through work placement as students, as well as by writing term and diploma papers concerning district nursing ($\bar{x}=4.45$). Furthermore, they believed that internal trainings and participation at various seminars and workshops outside their respective health organisations represented an adequate way of acquiring skills for individuals ($\bar{x}=4.23$). They gave high scores to the possibility of collaborating with other levels in relation to various jobs ($\bar{x}=3.91$), the possibility of attending presentations on new features with external associates and colleagues at the secondary and primary level ($\bar{x}=3.91$), encouragement and support given by the health organisation with regard to further education ($\bar{x}=3.88$), use of the internet ($\bar{x}=3.87$), consulting expert literature ($=3.84$), encouragement of the health organisation to study while working ($\bar{x}=3.71$), attending expert meetings in Slovenia and abroad ($\bar{x}=3.43$), and collaboration with external research institutions ($\bar{x}=3.09$). The t-test revealed that there are no statistically significant

differences ($t = 0.781$ $\alpha=0.05$; $p_{\alpha}=0.463$) between district nurses in terms of educational levels when it comes to acquiring skills by individuals in district nursing.

3.2 Knowledge/skills in nursing care activities requiring additional skills

The *Nursing Care Activities in District Nursing* (2011) document specifies all of the nursing care activities in district nursing. Some of these come with a note indicating that the relevant district nurse required additional skills to be able to carry them out. For this reason we were interested in establishing the skill level of district nurses in these activities. The respondents gave the highest rating to their skills of administering a cleansing enema ($\bar{x} = 4.34$) and dressing of epidural and other catheters ($\bar{x} = 4.05$). Their skills in terms of therapeutic communication with the patient and an elastomeric pump replacement were rated on average with a score of 3.7. The skill of a therapeutic touch was rated with an average score of 3.41, the preparing and administering of intravenous infusion solutions with 3.44, dressing skin affected by radiodermatitis received a score of 3.16 and communication with an aphasic patient was rated with 3.12. The respondents gave lower ratings to their skills of urine collection from a nephrostomy tube ($\bar{x} = 2.86$), bladder irrigation after cystostomy catheterization ($\bar{x} = 2.71$), memory training exercises ($\bar{x} = 2.70$), blood drawn from central venous catheters ($\bar{x} = 2.66$), filter replacement in an epidural catheter ($\bar{x} = 2.34$) and flushing an intravenous valve ($\bar{x} = 2.3$), all of which required an additional skill set if the district nurse should provide high-quality nursing care. The difference between the level of knowledge/skills in nursing care activities which required additional skills, and the education of the district nurses was statistically significant. District nurses with secondary school degrees placed greater emphasis on acquiring additional skills regarding the activities that scored lower (an average score below 3.0) than graduate district nurses ($t = 6.633$ $\alpha=0.05$; $p_{\alpha}=0.000$).

3.3 The most common way of acquiring the skills necessary for nursing care activities where such additional skills are required

The respondents rated as the most common methods to acquire skills necessary for nursing care activities where such additional skills are required: consulting colleagues in their respective organization ($\bar{x} = 4.7$), attendance at programmed professional meetings ($\bar{x} = 4.41$), keeping up to date with expert literature ($\bar{x} = 4.25$), consulting colleagues operating in other district nursing organizations ($\bar{x} = 4.23$), acquiring skills at a secondary level ($\bar{x} = 4.04$) and consulting doctors ($\bar{x} = 3.91$). We were interested to find whether the selection of the most frequent methods for acquiring skills for nursing care activities, where such additional skills are needed by the district nurses, had to do with the number of years of service. The t-test for analysing differences with regard to the significance of the methods which were used to acquire additional skills showed that district nurses with 31 to 35 years of service preferred the following methods: consulting colleagues in their respective organization ($t = -3.308$ $\alpha=0.05$; $p_{\alpha}=0.001$), consulting colleagues operating in other district nursing organizations ($t = -3.053$ $\alpha=0.05$; $p_{\alpha}=0.002$) and consulting doctors ($t = -2.547$ $\alpha=0.05$; $p_{\alpha}=0.011$).

3.4 The best types of acquiring skills in district nursing care activities

The surveyed district nurses were asked to give the best type (in their opinion) of acquiring skills in district nursing care activities. It was established that the majority of respondents (54.09%) believed that the best method was to consult colleagues in their respective organization, followed by consulting expert literature (21.43%), programmed professional meetings (10.71%), consulting colleagues operating in secondary specialist wards (7.14%), consulting doctors (3.57%) and consulting colleagues operating in other district nursing organizations (3.00%). The t-test revealed that there were no statistically significant differences ($t = -1.695$ $\alpha=0.05$; $p_{\alpha}=0.091$) in terms of the best method to acquire skills in district nursing activities between district nurses with different levels of education.

3.5 Acquiring additional and new skills at the primary and secondary level for nursing care activities

Most of the respondents (87.5%) believed that it made a great deal of sense to acquire additional and new skills for all nursing care activities at the secondary level, while 12.5% believed that it made a great deal of sense to acquire additional and new skills for all nursing care activities at the primary level, i.e. by having the opportunity to consult and collaborate with nursing care organizations from around Slovenia. They believed that it made sense to acquire additional and new skills at the secondary level for basic skills such as midwifery care, wound management, stoma care (13.8%) and for some activities such as colostomy irrigation, bladder irrigation after a cystostomy catheterisation, memory training exercises, filter replacement in an epidural catheter (22%) as well as for acquiring special skills and professionally advanced skills (51.7%). We were interested to find whether there was a correlation between acquiring additional, new skills at the primary and secondary level, and the years of service of the district nurses. The t-test for analysing the differences with regard to the significance of acquiring skills at the primary or secondary level showed that district nurses with 31 to 35 years of service favoured acquiring additional and new skills for all district nursing activities at the secondary level ($t = -2.901$ $\alpha=0.05$; $p_{\alpha}=0.004$).

4. Discussion

District nursing is a special type of healthcare service, which actively practices the health and social protection of individuals, families and communities. All of these subjects are very susceptible to negative influences from their environment (1, 11, 12, 13, 14, 15) due to their specific biological characteristics, ailments or their new surroundings in which they have been placed. District nursing services are designed to cover the whole population and require skills in all areas and for all nursing care activities within healthcare.

The activities of nurses operating in district nursing are aimed at studying and identifying ways within their efforts for people's health, to implement modern health-related findings and boost

and enhance people's health. The good health of an individual is essential for his/her social, economic and personal development and crucial for their quality of life (11).

The *Nursing Care Activities in District Nursing (16)* document specifies the top twenty activities that are most common in the clinical practice of nursing care within district nursing (breathing, eating and drinking, eliminating body waste, movement and desirable postures, sleep and rest, dressing and undressing, maintaining body temperature within the normal range, personal hygiene and grooming, avoiding dangers in the environment, communication - expressing needs and emotions, worshipping according to one's faith, meaningful work, play or recreation, learning and acquiring knowledge, work organisation and the development of the profession, the prevention and management of infections, preparing and administering medication, diagnostic and therapeutic activities, professional work preparation). Some of these activities had a note indicating that for those particular tasks district nurses required additional skills.

The work of a district nurse relies on continuous education, training and advanced training, and keeping up to date with the advance of the medical profession. To be able to practice tasks which are so demanding and varied, a district nurse needs a higher education degree, whereas the position of a district nursing team leader requires that the person in charge has completed a second-cycle education or specialisation in district nursing. Based on this, the aim of the research was to establish how district nurses acquired knowledge/skills, in which areas they were required to acquire additional knowledge/skills and which skills were prerequisite for top-level nursing care within district nursing.

The research has shown that most of the respondents needed additional skills for many of the activities which are specified in the *Nursing Care Activities in District Nursing (16)* document as requiring additional skills; it turned out that they did indeed have sub-standard skills in the following activities of district nursing: therapeutic touch ($\bar{x} = 3.41$), preparing and administering intravenous infusion solutions and medicines via an intravenous valve ($\bar{x} = 3.44$), dressing skin affected by radiodermatitis ($\bar{x} = 3.14$), communication with

aphasic patients ($\bar{x} = 3.12$), urine collection from a nephrostomy tube ($\bar{x} = 2.86$), bladder irrigation after a cystostomy catheterisation ($\bar{x} = 2.71$), memory training exercises ($\bar{x} = 2.70$), blood drawn from central venous catheters ($\bar{x} = 2.66$), filter replacement in an epidural catheter ($\bar{x} = 2.34$) and flushing an intravenous valve ($\bar{x} = 2.3$).

The skills of the surveyed nurses will be improved by consulting colleagues in their respective organization ($\bar{x} = 4.7$), attendance at programmed professional meetings ($\bar{x} = 4.41$), consulting expert literature ($\bar{x} = 4.25$), consulting colleagues operating in other district nursing organizations ($\bar{x} = 4.23$), secondary-level skill acquisition ($\bar{x} = 4.04$) and consulting doctors ($\bar{x} = 3.91$).

It should be kept in mind that district nurses encounter hurdles in the course of their knowledge/skills transfer and its application in district nursing, which hamper a smooth transfer of knowledge/skills (17). These hurdles are: poor communication skills which are otherwise necessary for transferring knowledge, a culture within the healthcare organisation, which is not conducive to disseminating knowledge, a healthcare organisation which does not favour interdepartmental knowledge/skill transfer, employees who are unaware of the significance of the dissemination and transfer of knowledge/skills within the healthcare organisation, employees who hide their knowledge/skills from their colleagues because they believe this was their competitive edge.

The basic goal of acquiring new knowledge/skills, training and advanced training for nursing care activities in district nursing is to set in motion reforms in the system for the nursing staff which are already employed, reforms in the specific field of education of district nursing professionals, establish partnerships between healthcare organisations at the primary and secondary level, train educators for their teaching role, and provide training and advanced training of the target group. In the process it is necessary to review the success and efficiency of the current implementation of education, training and advanced training programmes as part of the annual programme of the implementing curricula for training and advanced training, provide sugges-

tions on how to improve the partnership quality between nursing care at the primary and secondary level, and between the institutions. In addition, an integrated model of theoretical and practical knowledge of the participants should be defined as well. A group of mentors – training and advanced training providers at the primary and secondary level of nursing care – should be trained to provide high-quality mentorship in district nursing, including professional supervision.

5. Conclusion

Every individual should realize that today education is one of the most important values which open up new possibilities for augmenting and updating their existing skill set, but that it also facilitates personal growth. Education, training and advanced training of district nurses are necessary to promote the common growth and progress of society, seeing as district nurses are expected to plan, practice and assess the nursing care of individuals, families and communities not only during health and prosperity but also during illness, injury, inability, disability and unwanted conditions (13). Every district nurse should feel that education, training and advanced training are a life-long need, and be able to identify the real-life value and applicability of the newly acquired knowledge/skills. This can help them to grow as people and as professionals.

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A case report of successful treatment of aluminum phosphide (rice tablet)

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Abstract

Aluminum phosphide (ALP) is a substance which is used as anti-insects for groceries in most developing countries. This substance in combination with water produces phosphine, carbon dioxide and NH_3 . The way of toxicity for this substance is oral and inhalatory. Usage of more than one fourth of Aluminum phosphide results in shock (hypotension, tachycardia, tachypnea,...) and severe metabolic acidosis and finally failure in organs including cardiac, brain, lungs and etc. In this article we reported 29 years old woman which was referred due to altered mental states and severe weakness because of toxicity with Aluminum phosphide. Evaluations and lab tests indicated hypotension and metabolic acidosis. After three days, Continues injection of dopamine and sodium bicarbonate removed the clinical symptoms. This article revealed that early diagnosis with resuscitation care and good monitoring with continues prescription of bicarbonate has an important effect in survival of these cases. This article revealed that early diagnosis with resuscitation care and good monitoring with continues prescription of bicarbonate has an important effect in survival of these cases.

Key words: Intoxication, Aluminum phosphide, Metabolic acidosis

Introduction

Aluminum Phosphide (ALP) is a chemical compound that is highly used as an effective insecticide and rodenticide for protection of grains upon storage of warehouses and transportation across the developing nations (1). Severe and fatal poisonings caused by metal phosphides is more than India, Sri Lanka and Iran. Appearance of this type of poisoning is really rate in the European and American countries because it is cheap and

accessible in the aforesaid nations. For example, in India, from 1980 to 1990, an epidemics caused by accidental and intentional poisonings caused by metal phosphides were reported (2-5). When this material is in contact with water or water vapor, Phosphine Gas, Ammoniac and Carbon Dioxide are produced. This chemical is not absorbed by skin and the main way of poisoning is contact with the said chemical to cause oral and respiratory poisonings. Both kinds of poisoning mentioned above are highly observed. After oral consumption with ALP and in contact with moisture and reaction with stomach acid, the said material causes that Phosphine Hydrogen Gas (PH_3) will be generated and it is easily absorbed through both digestive system and lung epithelium. The said gas plays a prominent role in development of poisoning in human (6-7). The main effect of Phosphine Gas is to inhibit Cytochrome Oxidase -C and to inhibit oxidative phosphorylation in mitochondria (8-10). The fatal dosage of Aluminum Phosphide in an adult of 70 kg on average has been estimated for about 500 mg (11). In such cases as an individual takes over $1/4^{\text{th}}$ of fresh rice pill and vomiting delays for some minutes, severe poisoning with the said pill is made including shock (hypotension, tachycardia, *tachypnea* and the ones) and severe metabolic acidosis. Furthermore, more vital organs such as heart, brain, lungs, kidneys and liver are involved (12-13). In poisonings caused by metal phosphides, it is usual that symptoms appear quickly within 10-15 minutes (14-16). Diagnosis shall be made on clinical symptoms. However, in suspicious cases, Silver Nitrate Paper may be used (17-18). Due to great numbers of death caused by ALP poisoning and since there is no specific antidote to treat the said kind of poisoning, we are going to introduce a successful method of treatment for poisoning caused by rice pill.

Case Report

The patient is a 29-year-old woman who was taken by her friends to the emergency ward due to severe weakness and fainting and change of level of consciousness. The patient's companion state that the symptoms of the patient appeared following a family dispute for about 2 hours prior to reception. During this period, the patient had vomiting twice and drowsy and pale and did not rendered proper assistance. The temperature of the patient was 36.7 Axillaries with 23 respirations per minute. Room Air: 93% O_{2 sat}, heartbeats: 116 pulses per minute, blood pressure: 80/65 mmHg, with Bed Side Glucometry: 330 (Table 1). The patient was taken to CPR Room and underwent cardiac monitoring and pulse oximetry, and received a normal saline of 0.9%. However, her general conditions remain unchanged. According to blood gas test result, her pH was at 7.06 and Bicarbonate: 10 mmol/L and CO₂ pressure was reported as 32.5 mmHg (Table 1). Because of severe metabolic acidosis and primary hyperglycemia, the case of diabetic ketoacidosis was put forth for the patient. However, considering the sudden trend of disease and no record of diabetes, this diagnosis is impossible. According to the history of the patient, an emotional stress and unjustifiable acidosis of poisoning stood at top of differentiating diagnoses. Regarding the clinical symptoms and geographical outbreak of poisoning caused by ALP, this case was put forth for the patient. According to another and purposeful history of the patients taken from her companions, it was recommended to search the patient's room. Finally, the container of ALP was found. Then, treatment started for ALP poisoning. The patient was intubated. Her stomach was washed up using Permanganate 1: 1000 and then by Bicarbonate Lavage (88 milliequivalent). Injection of 1 gram of Magnesium Sulfate and 1 gram of Calcium Gluconate started for every six hours. Due to primary metabolic acidosis, 2 vials of Bicarbonate (88 milliequivalent) was received by the patient. Then, an Arterial Line was placed per hour to determine the level of PH. Bicarbonate was measured from the arterial blood. Because of low blood pressure of the patient, an internal jugular vein catheter was devised. Upon control of central vein pressure (CVP), Christalloid liqu-

ids were given to the patient (Table 1). During the first six hours of reception, in spite of treatment, patient's condition was worsened. Pufole infusion of 50 mg/min and Sodium Bicarbonate of 44 meq/h and Dopamine of 5 mic/min/kg were started and continued for 40 hours. Metabolic acidosis and blood pressure of the patient were stabilized in the third day. Finally, the patient was separated from the ventilator in the fourth day and in the fifth day, the patient was released from the hospital. After follow up of treatment for the patient within one week, no problem was found with the patient.

Discussion and Conclusion

Poisoning with Aluminum Phosphide is one of the most fatal kinds of intentional and accidental poisonings. It is available in form of dark gray pills of 3 grams per each pill containing 56% of Aluminum Phosphide and 44% of Aluminum Carbamate. Aluminum phosphide is severely poisonous and it is easily accessed. Eating the said medicine for committing suicide is the most common causes of suicide in the developing nations (3-15-19). Considering the above-mentioned patient, the symptoms were developed due to suicide and eating two tablets of Aluminum Phosphide. Tachycardia and drop of blood of pressure and metabolic acidosis in the said patient were the symptoms of severe poisoning. In these patients, drop of blood pressure is serious that constant intravenous injection of Crystalloid is not enough and it is inevitable to use Dopamine (13-16). Also, in the aforesaid patient, in spite of constant injection of normal saline during the first hours of reception, the patient's condition was worsened. By starting intravenous injection of Dopamine and constant Bicarbonate infusion, the blood pressure of the patient was gradually increased. Using Sodium Bicarbonate for invasive correctness of acidosis is a medical protocol has noticeably promoted the outcome of patients (30% vs 55%) (20). the aforesaid patient suffered from severe metabolic acidosis because of which intravenous infusion of Sodium Bicarbonate was continued for two days. Regarding the poisoning with ALP, drop blood pressure and symptoms of cute cardiac failure are developed as well. This may cause stoppage of cardiac-respiratory operation and death of pati-

ents within the first 24 hours (21-22). Cardiogenic shock and vessel clots in this kind of poisoning because of direct effect of poison on the myocardial cells besides sedimentation of intra-vessel fluids to the third space and development of severe metabolic acidosis in decrease of tissue perfusion (23-43). In this patient, the symptoms of severe drop of blood pressure and metabolic acidosis as well as cardiac disorder were as evident symptoms of poisoning with Aluminum Phosphide. It is possible that severe cardiac failure as a finalized complication may not be found in all cases of poisoning with Aluminum Phosphide. In fact, the symptoms of cardiac poisoning vary from unspecific strip changes to severe drop of blood pressure that is resistant to treatment among patients. Even in severe failures, contractive operation of the left ventricular of arteriovenous pressure remains at normal level (21-25-27). Considering the above patient, in spite of low blood pressure in the first and second days, central vein pressure was increased and the patient showed some degrees of cardiac failure. Treating the patient with Dopamine and intravenous bicarbonate infusion, the patient was recovered in the third day. In some studies, use of Dioxin for treatment of cute cardiac failure was put forth (26-28-29). Some authors are of this opinion that cardiac steroids such as Dioxin have no positive effect in administration patients suffering from cute cardiac failure especially decrease of their death (30-31). On the whole, it seems that early diagnosis of the disease and advanced RPC procedures for these patients and invasive monitoring of the said patient are effective in their recovery. Prescribing high dosage of Sodium Bicarbonate and constant infusion shall be effective in case of metabolic acidosis in recovery of hemodynamic condition of the patients.

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Abstract

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Regular paper may be divided in a number of sections. Section titles (including references and acknowledgement) should be typed using 12 pt fonts with **bold** option. For numbering use Times New Roman number. Sections can be split in subsection, which should be typed 12 pt *Italic* option. Figures

should be one column wide. If it is impossible to place figure in one column, two column wide figures is allowed. Each figure must have a caption under the figure. Figures must be a resolution of 300 DPI, saved in TIFF format, width 10 cm min. For the figure captions 12 pt *Italic* font should be used. (1)

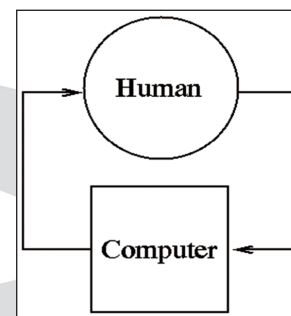


Figure 1. Text here

Conclusion

Be brief and give most important conclusion from your paper. Do not use equations and figures here.

Acknowledgements (If any)

These and the Reference headings are in bold but have no numbers.

References

1. Sakane T, Takeno M, Suzuki N, Inaba G. Behcet's disease. *N Engl J Med* 1999; 341: 1284–1291.
2. Stewart SM, Lam TH, Beston CL, et al. A Prospective Analysis of Stress and Academic Performance in the first two years of Medical School. *Med Educ* 1999; 33(4): 243– 50.

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