

# A Scaling Study for the Department of Nursery at Anatolian Health Vocational High School Students' Competence Perceptions of Area/Section Courses

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**Abstract** — Nursing is considered to be an important place in the health system and it is the only health disciplines in all dimensions which healthy/sick individuals are handled as a whole. Nurses assume responsibility for all the life stages of people's from birth to their death. The aim of this study is to determine the Department of Nursery at Anatolian Health Vocational High School 12<sup>th</sup> grade students' competence perceptions on area/section courses which take part at Ministry of National Education framework of instructional programs. This study is important to give some information about students' competence perceptions of area/section courses. This study was conducted with volunteer of 119 students from a state Anatolian health vocational high school located in Marmara region in Turkey. Data which have been taken according to paired comparison method were scaled. As a result students perceive the competence at the course of First Aid and Emergency Care and they do not perceive the competence at the course of Pharmacology.

**Index Terms** — Competence perceptions, Nursing education, Scaling, Pairwise comparison method.

## I. INTRODUCTION

Nursing is one of the most important professions of health services and nurses are permanent members of the healthcare team. Nursing has important responsibilities such as protecting and improving health, rehabilitating diseases. The World Health Organization (WHO) indicated that nurses played a key role in protecting and upgrading the health [1]. Nurse is a professional person who has knowledge and proficiency, looks after and rehabilitates the patient, takes part at prevention of the diseases and improves health.

Nursing is a theoretical and practical content-based science and art so it should not be considered only a professional care/practice. Despite not scientific, nursing profession got the roots thousands of years ago from affection, compassion, patient care and treatment approaches [2].

Nursing education gains students, knowledge of underlying nursing practices, skills, attitudes, behaviour, making decision, power of implementation, evaluation, innovation, professional features such as monitoring. For being effective in the new century, nursing education system must renew itself and it is necessary to respond to the needs, changing conditions and expectations. They also try to learn to develop judgement ability to clinic practice, turning behavior into gained knowledge and try to learn how, what, why to do [3]. In 1960, the Ministry of Health in Turkey has

started to open the Health Vocational High School. In nursing education, the proliferation has seen since 1961. The number of the Health Vocational High School increased rapidly and thus the need for manpower in hospitals have been compensated [4].

Nursing education is given in health high schools and at the nursing department of university in Turkey. Health vocational high schools have differences from the other vocational schools. First of all, health vocational high school students are learning area/section courses together with culture courses at the 9<sup>th</sup> grade. Second, the 11<sup>th</sup> and 12<sup>th</sup> grade students are training three days a week at hospital but at the other vocational high schools, students are training only at the 12<sup>th</sup> grade. In addition students who studied at the 11<sup>th</sup> and 12<sup>th</sup> grade have to complete internship/practice for 36 working days. Area/section courses for the students who studied at 9<sup>th</sup> to 12<sup>th</sup> grades at the school were given in table 1.

Table 1 - Area/Section Courses for grades

Grades	Courses
9 <sup>th</sup>	The Profession Principles and Technique, Anatomy and Physiology, Medical Ethics and Profession History,
10 <sup>th</sup>	The Profession Principles and Technique, Communication in Health Care, Biochemistry, General Nutrition, Microbiology and Immunization, Pharmacology, Epidemiology and Biostatistics, Internal Diseases and Care, Surgery Diseases and Care Woman Health Diseases and Care
11 <sup>th</sup>	The Profession Principles and Technique, Health Education, Infection Diseases and Care, Pediatric Diseases and Care, Internship/Practice.
12 <sup>th</sup>	Health Management, Community Health, Mental Health and Psychiatry, First Aid and Emergency Care, Pediatric Diseases and Care, Internship/Practice.

Internship/Practice courses are Surgery Diseases and Care, Internal Diseases and Care, Woman Health Diseases and

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Care at 11<sup>th</sup> grade. Infection Diseases and Care, Pediatric Diseases and Care, Mental Health and Psychiatry, First Aid and Emergency Care courses are the courses at the 12<sup>th</sup> grade. Contents of courses were given in below [5].

**PT - The Profession Principles and Technique:** Students are studying this course at the grade of 9, 10 and 11. This course involves personal hygiene and body mechanics, positions, vital signs, hot and cold application techniques, the patient's diet, giving urinal and bedpan, clyster, asepsis and antisepsis techniques, terminal diseases and nursing care, patient admission and discharge, wound care and treatment, bandages and practicing methods, drug administration, blood and blood products transfusion, devices used in diagnosis and treatment, customary applications and biological receiving materials subjects.

**PH - Pharmacology:** This course involves that medicine acting central nervous system, cardiovascular system, respiratory system, digestive system, urinary system, endocrine system acting drugs, chemotherapeutic and emergency medicine subjects.

**SD - Surgery Diseases and Care:** This course involves surgery, protective reaction of the body against injury, nursing care for the preoperative, intraoperative and postoperative terms, tumors, surgical diseases and nursing care of the cardio-vascular system, respiratory system, digestive system, endocrine system, nervous system, urogenital system, musculoskeletal system, mammoplasty, scalds and reconstructive surgery, ophthalmic diseases surgery, otorhinolaryngology surgery and nursing care, patient care in microsurgery, tissue and organ transplantation subjects.

**ID - Internal Diseases and Care:** This course involves the patient's needs, fluid and electrolyte, acid - base imbalance, concussion, cardio-vascular system, respiratory system, digestive system, endocrine system, urinary system, nervous system, musculoskeletal system, immune system, skin diseases and nursing care, oncology nursing subjects.

**WH - Woman Health Diseases and Care:** This course involves access to woman health, anatomy and physiology of female genital organs, pregnancy physiology, fetal physiology, antenatal care, labor, postnatal care, women's health diseases and care (gynecology), family planning subjects.

**IF - Infectious Diseases and Care:** This course involves infectious disease agents, nosocomial infections, infectious diseases and nursing care, parasitic diseases and notifiable diseases subjects.

**PD - Pediatric Diseases and Care:** This course involves fluid and electrolyte, acid-base balance and imbalance, malnutrition, nursing care in mental, psychological and physical defects, accident and precautions, immune system, cardiovascular system, respiratory system, digestive system, uro-genital system, central nervous system, hematological diseases, infectious, malignant diseases in childhood and nursing care subjects.

**MH - Mental Health and Psychiatry:** This course involves introduction to mental health and disorders, the basic concepts and standards of practice in psychiatric nursing, general signs and symptoms of psychiatric diseases, stages of

personality development, personality disorders and nursing attitudes, emotional and behavioral disorders in childhood and adolescence, anxiety, dissociative disorders, organic mental disorders, mood disorders, schizophrenia and other psychotic disorders, substance use disorders, sexual disorders, sexual identity disorders, attacks in psychiatric disorders, attack intervention and nursing care, treatment and nursing care in psychiatric disorders, legal aspect in psychiatry and ethics.

**FA - First Aid and Emergency:** This course involves introduction to first aid and emergency, evaluation of patient or injured people, injuries and hemorrhages, fracture, dislocation and sprains, first aid on other conditions, special cases, patient or injured people's transportation subjects [6].

There are many various studies in literature for health vocational high school students but there is not a research and comparison that studied the perception of area/section courses for health vocational high school students. Therefore, it is necessary and important to determine students' competence perceptions on this profession who especially care with people. In this respect, this is important to determine which student perceives himself more competence from the field of health vocational high school and scaling by pair-wise comparison.

Scaling is a making scale work, improving the quality that collected data with simple measurement tools and standardize the data. Scaling is not limited only with scale development process. There are also determining the scale values on scaling. The greatest benefit is to improve the quality of scaling [7].

Stevens (1966) defines scaling as marking objects with the number depending on the rules. But what does it mean? Most in scaling, objects indicates the expression of the subject, usually these statements are attitudes or beliefs. Stevens (1966) states that scaling is used sometimes to test hypotheses, sometimes used to determine a situation or concept whether one-dimensional or multidimensional [8].

Nursing profession requires specific proficiency knowledge and skills. In this profession you mustn't do any mistake. In health vocational high schools, the area/section courses are very important for students. There has not been any study about students' competence perceptions of area/section courses. Because of this students' competence perceptions of area/section courses are important and required. The aim of this study is to determine the 12<sup>th</sup> grade students' competence perceptions of area/section courses in Department of Nursery at Anatolian Health Vocational High School which take part at Ministry of National Education framework of instructional programs.

## II. METHOD

### A. *Research Model*

This study is a quantitative study that aims to scale courses which are chosen by students with pairwise comparison method.

### B. *Study Group*

The study consists of volunteers of 119 students who

attend the 12<sup>th</sup> grade in a public Anatolian health vocational

Table 2. Study Group Distribution

Anatolian Health Vocational High School	N	%
Number 1	53	44,6
Number 2	42	35,3
Number 3	24	20,1
Total	119	100

A. Data Collection

In this study a measurement tool is used to determine student's competence perceptions that according to paired comparison method. Area/section courses which take part at Ministry of National Education framework of instructional programs are considered when the measurement tool prepared. At the Ministry of National Education framework of instructional programs, there are nineteen courses. Making Scaling with 19 courses is very difficult so in the study only nine courses are tackled. These courses are the internship/practice courses and The Profession Principles and Technique and Pharmacology.

high school located in Marmara region in Turkey.

B. Data Analysis

In this study pairwise comparison method is used which was found by Thurstone (1927). At the beginning of the study frequency matrices are created for each student. Then ratios matrices are calculated. After that Z values calculated and got Z' values.

III. FINDINGS

Pairwise comparison method has used for this study to determine students' perceptions about competence. Scaling steps shown in tables. In table 3, courses are scaled by pairwise comparison method that students perceive more competence. Frequency matrix values are shown in frequency matrix.

Table 3. Row Scores Matrix for Area/Section Courses  $F[n(s_j > s_k)]$

	PT	PH	SD	ID	WH	IF	PD	MH	FA
PT		101	60	63	67	77	59	51	46
PH	18		28	18	12	17	22	14	14
SD	59	91		64	36	64	49	55	46
ID	56	101	55		34	77	68	52	54
WH	52	107	83	85		79	47	39	32
IF	42	102	55	42	40		77	86	93
PD	60	97	70	51	72	42		48	40
MH	68	105	64	67	80	33	71		58
FA	73	105	73	65	87	26	79	61	
Total	428	809	488	455	428	415	472	406	383

The total sum of the row and column of the response given to each student of the frequency matrix.

Table 4. Ratio Matrix for Area/Section Courses  $P[n(s_j > s_k)/N]$

Ratio Matrix	PT	PH	SD	ID	WH	IF	PD	MH	FA
PT		0,849	0,504	0,529	0,563	0,647	0,496	0,429	0,387
PH	0,151		0,235	0,151	0,101	0,143	0,185	0,118	0,118
SD	0,496	0,765		0,538	0,303	0,538	0,412	0,462	0,387
ID	0,471	0,849	0,462		0,286	0,647	0,571	0,437	0,454
WH	0,437	0,899	0,697	0,714		0,664	0,395	0,328	0,269
IF	0,353	0,857	0,462	0,353	0,336		0,647	0,723	0,782
PD	0,504	0,815	0,588	0,429	0,605	0,353		0,403	0,336
MH	0,571	0,882	0,538	0,563	0,672	0,277	0,597		0,487
FA	0,613	0,882	0,613	0,546	0,731	0,218	0,664	0,513	
Total	3,597	6,798	4,101	3,824	3,597	3,487	3,966	3,412	3,218

Each member of F matrix was divided into N (N=119). As a result, P ratio matrix shown in table 4.

Table 5. Unit Normal Deviation Matrix for Area/Section Courses (Z)

Unit Normal Deviation Matrix (Z)	PT	PH	SD	ID	WH	IF	PD	MH	FA
PT		1,031	0,011	0,074	0,159	0,377	-0,011	-0,180	-0,288
PH	-1,031		-0,722	-1,031	-1,277	-1,068	-0,897	-1,187	-1,187
SD	-0,011	0,722		0,095	-0,517	0,095	-0,223	-0,095	-0,288
ID	-0,074	1,031	-0,095		-0,566	0,377	0,180	-0,159	-0,116
WH	-0,159	1,277	0,517	0,566		0,423	-0,266	-0,446	-0,616
IF	-0,377	1,068	-0,095	-0,377	-0,423		0,377	0,591	0,777
PD	0,011	0,897	0,223	-0,180	0,266	-0,377		-0,245	-0,423
MH	0,180	1,187	0,095	0,159	0,446	-0,591	0,245		-0,032
FA	0,288	1,187	0,288	0,116	0,616	-0,777	0,423	0,032	
Total	-1,173	8,399	0,223	-0,579	-1,296	-1,540	-0,172	-1,689	-2,173
Z Mean	-0,130	0,933	0,025	-0,064	-0,144	-0,171	-0,019	-0,188	-0,241
Sj	0,111	1,174	0,266	0,177	0,097	0,070	0,222	0,053	0,000

In ratio matrix, the main variable is the sum of the diagonal matrix must be equal to one. For Z matrix, the z values are determined to correspond the elements of the P matrix.

When Table 5 examined, the smallest of Z mean value is -0.241 for First Aid and Emergency Care course. The starting point of the axis has shifted and Sj values found. So then for each Z mean value, the absolute value of 0.241 added. As a result, scale values of Sj were obtained for The Profession Principles and Technique (PT), Pharmacology (PH), Surgery Diseases and Care (SD), Internal Diseases and Care (ID), Women's Health Diseases and Care (WH), Infectious Diseases and Care (IF), Pediatrics Diseases and Care (PD), Mental Health and Psychiatry (MH) and First Aid and Emergency Care (FA) courses.

Table 6. Scales Values and Orders for Area/Section Courses

Courses	Values	Order
The Profession Principles and Technique	0,111	5
Pharmacology	1,174	9
Internal Diseases and Care	0,266	8
Surgery Diseases and Care	0,177	6
Woman Health Diseases and Care	0,097	4
Infection Diseases and Care	0,070	3
Pediatric Diseases and Care	0,222	7
Mental Health and Psychiatry	0,053	2
First Aid and Emergency Care	0,000	1

According to the results shown in table 6, their most competence perception course is First Aid and Emergency Care while the least competence perception course is Pharmacology. Courses which are Internal Diseases and Care, Pediatric Diseases and Care and Surgery Diseases and Care are not really recognized by students as a course while Mental Health and Psychiatry and Infection Diseases and Care are the mostly used courses. Data was investigated by pairwise comparison method and as a result, students

perceive the competence at the course of First Aid and Emergency Care and they don't perceive the competence at the course of Pharmacology. In that case, the most discrimination course is Pharmacology.

#### RESULTS AND CONCLUSION

When asked to the students, which courses they perceived the competence, they answered that it was First Aid and Emergency Care. The reason is for this situation, students are learning this course in the 12<sup>th</sup> grade and they are internship/practice in the 12<sup>th</sup> grade. So they perceive them more competence.

Secondly, they perceive the competence at the course of Mental Health and Psychiatry. They may perceive the competence in this course because of communicate with people more easily and understand people better before.

Thirdly, they perceive the competence at the course of Infection Diseases and Care. They know all about subjects and be aware of the risks for this course. According to this, they are afraid of risks so they know, they have to be careful and they perceive the competence.

Fourth, they perceive the competence at the course of Woman Diseases and Care. Most of the students are girl and because of their anatomy this course is interesting for them. Furthermore, this service is the only service gives happiness in hospital because of maternity.

Fifth, they perceive the competence at the course of The Profession Principles and Techniques. They are working as a trainee in hospital. They do only giving injections, phlebotomy, prepare medicine etc. in hospital. The main problem is here, they feel scared because all the responsibilities will be on them after graduation.

Sixth, they perceive the competence at the course of Surgery Diseases and Care. Since both course subjects and working situations are very busy, they don't like being at operating room and mostly they only watch how the operation to be done. They don't do anything in the operating room.

Seventh, they perceive the competence at the course of Pediatric Diseases and Care. Taking care with children is

more difficult than adults. They have to be more responsible for children patient. Because children cannot state their situations. Medicine dose calculation is very important so they don't perceive the competence at this course. Even if the least wrong calculation, they can encounter serious problems. That's why they perceive incompetence for this course.

Eighth, they perceive the competence at the course of Internal Diseases and Care. Internal Diseases area is very comprehensive. All diseases have to be known. So this course and area may be difficult for them.

Ninth, they perceive the competence at the course of Pharmacology. As well as being this course is important, it is very comprehensive and difficult. Because they have to know all body systems, each disease of body systems, and each disease's medicine, medicine's doses, giving way, side effects, etc. So they don't perceive the competence at this course.

In addition, teachers' attitudes, teaching methods, nurses' behaviours to students and working place may affect their competence to courses.

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