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Students' Perceptions and Attitude about Automated Assessment and Objective Examination in Faculty of Nursing

NahedSh Abo Elmagd[1]; Faransa A Ahmed[2]; Shimaa A Khalaf[3] and Shaemaa G Hassan[4]

[1]Assistant Professor of Nursing Administration, Faculty of Nursing, Assuit University, Egypt
Correspondence E-Mail: nahedaboelmagd@yahoo.com. Tel. 01011158435, [2] Lecturer of Pediatric Nursing, [3]Lecturer of Community Health Nursing, [4]Lecturer of Gynecological and Obstetric Nursing, Faculty of Nursing, Assuit University, Egypt

Abstract : Background: *It's not always possible to perform every security test manually. The automated evaluation system developed and intended to replace the traditional paper evaluation forms.**Objectives:** This study aimed to assess the perception and attitude of the third year students about automated assessment and objective examinations. **Design**: Descriptive research design utilized in this study. **Subjects and Methods:** This study included all third year students (n=200). A questionnaire sheet used to assess the perception and attitude about automated assessment and objective examinations. **Results:** There was a statistical significance difference between students' perception and attitude about examination system pre/post automated assessment application. **Conclusion:**There was improvement in the students' perception and attitude about the application of automated assessment and objective examinations .There was negative correlation between the students' perception about the application and the student anxiety from the exam while there was positive correlation between the students' attitude and anxiety level.**The study recommended** that students need more training programs about examination and the automated assessment especially for new students.*

Key Wards: *Perceptions, Attitude, Nursing Students, Objective Examination, automated assessment.*

I. Introduction

It is generally recognized that examinations determine the extent to which educational objectives have been achieved as well as the extent to which educational institutions have served the needs of community and society **(Jamil et al, 2010)**.

Examinationis not limited to measure educational or societal objectives and needs but incorporate in a way of coping with the educational system. Examinations play a significant role in determining what goes on in the classroom in terms of what and how teachers teach and students learn and can have impact on both teaching and learning. Testor examinations are used as alternative terms of assessment and defined as: 'test or an examination (or exam) is an assessment indeed to measure a test-takers knowledge, skill, aptitude, physical, fitness or classification in many other topics **(Havens, 2002 and Jamil et al, 2010)**.

Majority of universities are dealing with issues associated with examination setting and assessment due to increasing number of students. Set a new paper in every examination is one problem and its assessment is another problem.Examination paper setting and its assessment require lot of efforts, consumes enormous time, more resources and immense pressure on a faculty member **(Qureshi, 2013)**.

Various examination methods used in higher education institutions to assess academic progress, for example, paper-pencil-based examinations, assignments, presentations…etc. The most commonly used are examinations.Exams are an important instrument of student assessment. The style of assessment can have an important influence on student learning **(Uysal and Kuzu, 2009)**.

The rapid advancement of Information and Communication Technologies (ICT) in teaching and learning has shifted the paradigm from paper-pencil-based to computer-based system of examinations which are usually termed as Computer Assisted Testing, ComputerizedAssessment, Computer Based Testing (CBT), Computer Aided Assessment (CAA) and Computer Based Assessment (CBA) **(Uysal and Kuzu, 2009)**.

Due to the inclusion of ICTs in education, it is required to re-consider and rethink, modify or change the traditional examination methods. Automated assessment tools had reduced the burden of teachers and

facilitate to conduct examinations purposefully. Computer-based examinations can be used to promote more effective learning by testing a range of skills, knowledge and understanding **(Jamil et al, 2010)**.

Computer-Based Tests offers several advantages over traditional paper-and-pencil or paper-based tests. Technology based assessment provide opportunities to measure complex form of knowledge and reasoning that is not possible to engage and assess through traditional methods **(Bodmann and Robinson, 2004)**.

With all of the benefits of CBM, there are some issues that arise in the use of paper and pencil CBM, including printing costs, administration time and consistent scoring **(Balogn and Olanrewaju, 2014 and Hensley, 2015)**.

By analyzing the findings in the literature, it is easy to categorize main confounding factors when comparing test mode as: personal characteristics of test takers, features of computer-based testing systems and test content. The related literature shows that some personal characteristics of test takers may have impact on students' performance on different test modes **(Ozalp-Yaman and Cagiltay, 2005)**.

Some features of a CBT system such as the reliability of the CBT system, abilities of the system, can be another confounding factor. Supportive exam types such as essay type or multiple choice types as well as the evaluation procedure of the exam can all be considered in this category **(Ozalp-Yaman and Cagiltay, 2005)**.

Researches have been conducted to evaluate the comparability of CBT and Paper and Pencil Test (PPT). Some studies revealed that there was a significant difference between the two testing modes on test scores, while other studies reported opposite or inconsistent results **(Piaw, 2009)**.

Significance of the study

During the researchers' work in the Faculty of Nursing at Assiut University, they have been observed that students complain from deficit in knowledge about automated assessment system. So, results of this study hoped to improve students' knowledge about automated assessment system.

Aim of the study

This study aimed to assess the attitude and perception of third year students about objective examination and automated assessment system and improve their knowledge about objective examination and automated assessment tooland to assess the effects of applying this system on the students' anxiety from exams.

Research Questions:

1- What do the students perceive about objective examination and automated assessment system?

2- What are the students' attitude toward the objective exam and automated assessment system?

3- What is the relation between student attitude and perception pre and post objective examination and automated assessment system?

4- What is the effect of student attitude and perception about the objective examination and automated assessment system on the students' anxiety level from exams?

II. Subjects and Method

Research design:

Descriptive research design was utilized in this study.

Sample:-The subjects of the study were all the third year students (200 students) after studying of nursing administration, pediatric and obstetric nursing courses before and after final writing exams in Faculty of Nursing, Assiut University.

Setting:-The present study was carried out in the Faculty of Nursing, Assiut University.

Tools of the study:

A self-Administered Questionnaire which consisted of:

Tool (1): Socio-demographic data sheet:It included data about study participants such as: name, age, sex, residence, knowledge, training and sources of their knowledge about objective exam and automated assessment.

Tool (2): students' perception and attitude about objective examination and automated evaluation system questionnaire:

A self-administered questionnaire sheet was used to assess students' perception and attitude about objective examination and automated evaluation system and to assess the effects of applying this system on the students' anxiety from exams. It was developed by the researchers after reviewing the relevant literature and related studies.

This tool was contain four parts; The firstpart: was to assess students' perception about automated assessment (21) questions, **Second part:** was to assess students' perception about objective exam (4) questions, **Third part:** was to assess students' attitude toward the application of automated evaluation system at the faculty (14 questions) **And the fourth part:** was to assess students' anxiety about examinations (10 questions)

Scoring system: The participants responded to a three-point Likert scale by selecting one from three alternatives; it indicated if they agree, uncertain or disagree with the statements. The scores are calculated as follows: (2)agree, (1)uncertainand (0) disagree and vice versa for the negative items.

The scale ranges from(0-42) for the perception about automated assessment,(0- 8) for objective exam,(0-28) for the attitude toward the application of automated evaluation system (the scores less than 60% considered negative attitudes, meanwhile scores more than 60% suggest a positive attitude), finally (0-20) for the anxiety about examinations (the scores less than 50% considered low anxiety, more than 50% to 75% considered Moderate anxiety and more than 75% suggest a high level of anxiety).

Validity: The validity of the study tool was assessed to check the relevance, coverage and clarity of the questions. The content validity of the questionnaire was assessed by a jury of 5 experts in the related field; the content validity index was (0.83).

Reliability: Reliability was assessed using Cronbach α test to measure the internal consistency which yielded (0.85).

The same tools were used before the exam and immediately after the students finishing of nursing administration, pediatric and obstetric nursing final written exams.

III. Methods

1) Preparatory and administrative phase

- An official letter approval was obtained from the Dean of Faculty of Nursing; Assiut University.
- An official permission was obtained from departments' head of nursing administration, pediatric and obstetric nursing.
- Approval of nursing ethical committee in the faculty was obtained.
- This letter included a permission to carry out the study and explain the purpose and nature of the study.

Pilot study:

A pilot study was conducted for 10% (20 students) from third year students.They were chosen randomly. According to the results of the pilot study, necessary modification was carried out and these students were excluded from the study subjects. The aim of pilot study was to test the clarity, applicability of tool and to estimate the time required to fill the questionnaire.

II-Data collection:

A- Ethical considerations:

The purpose of this study was explained for every student and department's head of nursing administration, pediatric and obstetric nursing departments. Students had the ethical rights to participate or refuse the participation in the study. Oral consent was taken after informing them that the obtained data would be confidential and used only for the purpose of the study.

B- Field work:

Data was collected in the academic year 2015, at first; the researcher assessed the students' expectations before the data collected through a questionnaire and distribution of thebrochure about automated evaluation system,objective examinations & automated assessment tools and follow up after finishing of nursing administration, pediatric and obstetric nursing final written exams.

The study carried out in three phases:-

Phase 1:-Assessment of the students' perceptions about (agreement on the use of automated correction in exams, knowing well about the automated correction for exams, automated correction will provide justice, automated correction will save time…etc.) before beginning of nursing administration, pediatric and obstetric nursing final written exams.

Phase2:-Distribution of brochure as an educational material about automated evaluation system,objective examinations & automated assessment tool.

Phase 3:-Assessment of students' perception and attitude automated evaluation system and objective examinations after finishing of nursing administration, pediatric and obstetric nursing final written exams.

Statistical analysis:

Collected data was revised and coded for computerized data entry. Data then verified prior to statistical analysis. Statistical methods were applied including descriptive statistics such as (frequency, percentage, mean and standard deviation), Chi-squire(x^2), Paired t-test, Independent T-Test, ANOVA test were used. P-values were considered statistically significant when they were less than 0.05.

IV. Results

Table (1): Shows that 65% of the students were from rural area. Regarding their knowledge about automated assessment, 80% of them didn't know about it and 17 % of them didn't have training on how to deal with the automated exam paper. More than half of them were obtained their information about it from academic staff of department.

Table (2): Presents students' perception regarding automated assessment. It was noticed that before the exam 50.0% of them agreed on using of automated assessment, compared with 83.0% after passing automated assessment exams. As well as 16.0% of them agreed on that automated assessment will provide justice assessment of the exam papers, while 89.0% of them agreed after passing the exam. Also about 68.0% of them agreed that automated exams will decrease the mistakes compared with 92.0% after passing the exam. 72.0% of the students agreed on that automated assessment system will save effort compared with 94.5% after passing the exams. About 79.0% of them think that the results of exam by using the automated assessment system will be neutrality compared with 93.0% after passing the exams.

The majority(75.0%, 64.0% and 65.0% respectively) of them were agree to applying of this systemfor administration, gynecological and obstetric and pediatric nursing courses before passing the exam compared with (87.5%, 87.0% and 84.0% respectively) after passing the exams. There were highly statistically significant relation between all the items of students' perception about automated assessment pre/post exam($p<0.01$).

Table (3): Regarding to the student perception about the objectives questions; before the exam (46.0%) of the students agreed on that these questions are easier than essay questionscompared to(89.0%) after passing the exam. While nil (0.0%) of them were agree that the objective questionsare always more difficult than the essay questions, and that itgives the opportunity for creativityor distinguish between students about the other items.There were highly statistically significant difference between all the itemsof students' perception about objectives questions pre/post exam ($p<0.01$).

Table (4): Relationship between total score of students' attitude and perception about exam and applying automated assessment, it was observed that there was statistical significance difference between students' perception and attitude about examination system pre/post automated assessment application ($P<0.001$). Also, there was statistical significance difference between students' anxiety toward exams pre/post automated assessment application ($P<0.001$).

Table (5): Show that (47.0%) of the students agree about automated assessment pre exam compared to(95.5%) of them post exam, (30.0%) of them agree about objective questions pre exam compared to(70.5%)of them post exam. (72.0%) of the student had negative attitude about applying automated assessment system pre exam compared to (2.0%) of them post exam. (56.0%) of the student had high anxiety about exams pre the application of automated assessment compared to nil of them post exam.

Table (6): Shows that there were statistical significant relation between the students' perception and attitude about applying automated assessment, objective questions and students' anxiety about exams ($P<0.001$). There were negative relation between the students' perception about applying automated assessment, objective questions and students' anxietytoward exams. While there was positive relation between the students' attitude about applying automated assessment and students' anxietytoward exams.

Table (1): Distribution of the nursing students according to their personal data

Items	**No(n=200)**	**%**
Age mean±SD (range)	20.9±0.6(20-23)	
Sex		
Female	200	100
Residence		
Urban	70	35.0
Rural	130	65.0
Knowing about automated assessment		
Yes	39	19.5
No	161	80.5
Training on automated assessment		
Yes	34	17
No	166	83
Sources of your information about automated assessment		
Head of department	24	24.0
Academic staff of department	59	59.0
Collages	13	13.0
Others	4	4.0

Table (2): Relationship between students' perception about automated assessment pre/post exams

Items	Pre						Post						P. value
	Agree		Uncertain		Disagree		Agree		Uncertain		Disagree		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
1. Agreement on the use of automated assessment in exams	100	50.0	36	18.0	64	32.0	166	83.0	32	16.0	2	1.0	<0.001**
2. Knowing well about the automated assessment for exams	40	20.0	18	9.0	142	71.0	182	91.0	16	8.0	2	1.0	<0.001**
3. I have been taught how to answer the exams that will assessed by the machine	24	12.0	16	8.0	160	80.0	188	94.0	9	4.5	3	1.5	<0.001**
4. I have not been trained on how to answer the exams that will correct by the machine.	20	10.0	16	8.0	164	82.0	4	2.0	9	4.5	187	93.5	<0.001**
5. I do not know anything about automated assessment system	142	71.0	22	11.0	36	18.0	3	1.5	7	3.5	190	95.0	<0.001**
6. I think the electronic correction will provide justice	32	16.0	12	6.0	156	78.0	178	89.0	19	9.5	3	1.5	<0.001**
7. I think automated assessment system will saves time	126	63.0	34	17.0	40	20.0	168	84.0	32	16.0	0	0.0	<0.001**
8. I think automated assessment system will save effort	144	72.0	20	10.0	36	18.0	189	94.5	8	4.0	3	1.5	<0.001**
9. I think the automated assessment system will provide a 100% without mistakes	136	68.0	22	11.0	42	21.0	184	92.0	13	6.5	3	1.5	<0.001**
10. Automated assessment system will prevent exam cheating	98	49.0	42	21.0	60	30.0	170	85.0	28	14.0	2	1.0	<0.001**
11. Automated assessment system will facilitate the process of exam assessment	108	54.0	30	15.0	62	31.0	168	84.0	32	16.0	0	0.0	<0.001**
12. I think the results of exam by using the automated assessment system will be neutrality	158	79.0	26	13.0	16	8.0	186	93.0	14	7.0	0	0.0	<0.001**
13. I think using the automated assessment system will make the exam more difficult	36	18.0	28	14.0	136	68.0	0	0.0	28	14.0	172	86.0	<0.001**
14. All exams will be clear using the same format	78	39.0	24	12.0	98	49.0	183	91.5	17	8.5	0	0.0	<0.001**
15. Examinations will be the highest level of accuracy	124	62.0	38	19.0	38	19.0	167	83.5	33	16.5	0	0.0	<0.001**
16. This system will identify the strongest and weakest questions	140	70.0	24	12.0	36	18.0	164	82.0	36	18.0	0	0.0	<0.001**
17. This system can be submitted a report of students grades in all exams easily	120	60.0	36	18.0	44	22.0	157	78.5	43	21.5	0	0.0	<0.001**
18. This system can submit a report of students' result in each subject separately easily and quickly	156	78.0	12	6.0	32	16.0	179	89.5	21	10.5	0	0.0	<0.001**
19. Application of this system will be appropriate for introduction of nursing administration exam.	150	75.0	22	11.0	28	14.0	175	87.5	25	12.5	0	0.0	<0.001**
20. Application of this system will be appropriate for gynecological and obstetric nursing exam.	128	64.0	30	15.0	42	21.0	174	87.0	26	13.0	0	0.0	<0.001**
21. Application of this system will be appropriate for pediatric nursing exam.	130	65.0	16	8.0	54	27.0	168	84.0	32	16.0	0	0.0	<0.001**

Chi-squire test, * Statistically significant difference ($p<0.05$)**,**** Highly statistically significant difference ($p<0.01$).

Table (3): Relationship between students' perception about objective questions pre/post exam

Items	Pre						Post						P. value
	Agree		Uncertain		Disagree		Agree		Uncertain		Disagree		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
1. Objective questions are always more difficult than the essay questions	52	26.0	40	20.0	108	54.0	0	0.0	23	11.5	177	88.5	<0.001**
2. Objective questions are easier than essay questions	92	46.0	34	17.0	74	37.0	178	89.0	22	11.0	0	0.0	<0.001**
3. Objective questions givesthe opportunity for creativity	76	38.0	36	18.0	88	44.0	0	0.0	34	17.0	166	83.0	<0.001**
4. Objectivity questions givesthe opportunity to distinguish between students	66	33.0	28	14.0	106	53.0	0	0.0	28	14.0	172	86.0	<0.001**

Chi-squire test** Statistically significant difference ($p<0.01$)

Table (4): Relationship between total score of students' perception and attitude about applying automated assessment, objective questions and students' attitude about exams

Items	Total score	Pre	Post	P. value
Students' perception about automated assessment system	42	26.9±6.7	33.9±2.9	<0.001**
Students' perception about objective questions	8	2.3±0.6	3.6±1.6	<0.001**
Students' attitude about applying automated assessment system	28	25.3±2.9	13.6±5.5	<0.001**
Students' attitude toward exams	20	14.3±3.4	1.8±2	<0.001**

Paired t-test

* Statistically significant difference ($p<0.05$)

** Statistically significant difference ($p<0.01$)

Table (5): Relationship between students' perception and attitude about applying automated assessment, objective questions and students' anxiety toward exams

Variables	Pre		Post		P. value
	No.	%	No.	%	
Students' perception about automated assessment					
Disagree	8	4.0	0	0.0	<0.001**
Uncertain	98	49.0	9	4.5	
Agree	94	47.0	191	95.5	
Students' perception about objective questions					
Disagree	30	15.0	0	0.0	<0.001**
Uncertain	110	55.0	59	29.5	
Agree	60	30.0	141	70.5	
Students' attitude about applying automated assessment system					
Negative	144	72.0	4	2.0	<0.001**
Positive	56	28.0	196	98.0	
Students' anxiety toward exams					
Low anxiety	4	2.0	196	98.0	<0.001**
Moderate anxiety	84	42.0	4	2.0	
High anxiety	112	56.0	0	0.0	

** Statistically significant difference (P<0.01).

Table (6): Correlation between thestudents' perception and attitude about applying automated assessment, objective questions and Students' anxiety toward exams

Items	Students' anxiety toward exams	
	R	P. value
Students' perception about automated correction.	-0.55	<0.001**
Students' perception about objective questions.	-0.47	<0.001**
Students' attitude about applying automated assessment system.	0.67	<0.001**

** Statistically significant correlation (p<0.01).

V. Discussion

During the past few years, technology has significantly reshaped the method of assessment. In many academic domains, educational measurement has been moving towards the use of computer-based testing (CBT) **(Jimoh et al, 2010)**

This study aimed to assess the attitude and perception of third year students about objective examination and automated assessment system and improve their knowledge about objective examination and automated assessment tooland to assess the effects of applying this system on the students' anxiety from exams.

The total number of the participated was 200 students, (65%) of them were from rural area, the majority of them didn't know about the automated assessment before the application and they did not receive training courses about how to use the answer sheet when answer on a designed automated correction exams. Because this method of students' evaluation is applied recently in the faculty.

Due to the increased number of the enrolled students in the faculty, the faculty administration decided to use the automated correction in students' evaluation. This will save time, effort and minimize the human fault.

From students' perspective of the CBT there have been a number of mixed reactions. Less than half (47%) of the students agreed on using of the automated correction before the exam and the percentage increased after the exam to 95.5% of them. This may be because students preferred the objective questions more the essay questions. This result was in the same line with **Erle et al, (2006)** their research showed that despite fewer students being confident about CBT before completing the assessment more students stated a preference for CBT afterwards

The present study found that (84%)of the student after exam agreed that automated assessment system will facilitate the process of exam assessment these results were not the same line with the previous research that showed that more people anticipated problems with the computer assisted assessment. **(Erle et al, 2006)**.

Results of the present study were not agreement with those obtained by the study of **Maryellen, (2016)** noted that in regards to university level work, providing electronic assessment tool can be more time-consuming than traditional assessments and therefore more expensive.

As regards to objective question ,results of the present study show that (89%) of the student agreed that Objective questions are easier than essay questions and that (0.0%) of them were agreed that Objective questions gives the opportunity for creativity and distinguish between students after application this results are in agreement with those obtained by the study of **Nkeiruka et al, (2014)** reported that one hundred and thirty-one respondents (84%) felt easy traditional exam is more difficult and 20 (12.8%) felt objective exam was more difficult. One hundred and forty-two (91%) felt objective exam was easier to pass, 8 (5.1%) felt traditional exam was easier to pass and 6 (3.8%) were undecided.

The present study found that (89%)of the student agreed that the electronic correction will provide justice for the objective question after exam .These results were in accordance with what mentioned by **Awaisu, (2007)** added that the over 80% of the students found the objective questions to be helpful in highlighting areas of weaknesses in their course competencies. Seventy-eight percent agreed that it was comprehensive and 66% believed it was fair.

The present study found that the majority of the student agreed that the automated assessment system will saves time and effort (84%, 94.5%) respectively these results were in agreement with those obtained by the study of **Beckert et al, (2003)** who reported that objective tests often require less time to administer for a given amount of material than would tests

requiring written responses. This results in a more comprehensive evaluation of the candidate's extent of knowledge. Even greater efficiency can be created by the use of electronic examination delivery software. This increase in efficiency can offset the advantages offered by free-response items.

In the present study more than half of the students (56%) suffer from high anxiety level before exams progress to (0.0 %) nil of them after the exams.These results in the same line with previous study conducted indicated a preference for CBT over PPT (Penand-paper Testing). Some studies reported the main disadvantage as being increased anxiety amongst those students **(Erle et al, 2006)**.

Results of the present study were in agreement with those obtained by the study of Child Line National Exam Stress Survey by **Rebecca, (2010)**revealed that 96% of the 1300 who completed the survey felt anxious about exams.

The present study found that there were negative relation between the students' perception about applying automated assessment, objective questions and students' anxiety toward exams. These results in the same line with **Erle et al, (2006)** who found a statistical relation between the using of Computer-Based Testing (CBT) and the students' anxiety from exams.

VI. Conclusion:

Based on the results of the present study,it was concluded that there is improvement in the students' perception and attitude about the application of automated assessment and objective examinations. There was negative correlation between the students' perception about the application and the student anxiety from the exam while positive correlation between the students' attitude about the application and the student anxiety from the exam.

The study results showed a marked improvement of students' perception about exams after the distribution of a brochure to identify the objective exam. The study confirms the need and the effectiveness of focused multifaceted training courses in improving students' perception andattitude toward the automated assessment system.

Recommendations: In the light of the study findings, it is recommended to conduct training courses to improve the ability of students to deal with the computerized test especially for the new students. Increase the students' ability to deal with the exams stressors and anxiety through continuous counseling workshops.

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