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RESEARCH ARTICLE

PERCEPTIONS OF 'PAPER-BASED' LECTURE HANDOUTS AMONG FIRST YEAR MEDICAL STUDENTS AT AL-KINDY MEDICAL COLLEGE

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Abstract

Background: Paper-based-lecture handouts were developed as teaching aids and study guides for learning and revision before examination, since it makes learning more easy and helps students save time and focus their study on the subjects. Handouts impact were: understanding is facilitated, exam anxiety is reduced, academic performance is enhanced, and achieving better results.

Objectives: Aim of the study was to determine perception of medical students on paper-based-lecture handouts as learning tool and how this tool used by them.

Methods: A cross-sectional study was conducted at the Medical College of Alkindy-University of Baghdad, A 20-item questionnaire regarding perception towards paper-based lecture handouts was distributed to 174 first year medical students. The answers were analyzed using SPSS v17.

Results: Majority (97.1%) agree or strongly agree that the paper handouts were useful, (93.7%) of them agree or strongly agree that the paper handouts make learning more easy, (77.6%) of them agree or strongly agree that the paper handouts help them to achieve better results, (94.8%) of them agree or strongly agree that the paper handouts considered as a guide before an examination, (94.3%) of them agree or strongly agree with receiving complete paper handouts.

Conclusion: This study showed that first year medical students, expectations were positive towards complete paper-based-lecture handouts and prefer to be distributed before lecture, regarded it as a useful important and essential teaching tool.

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Introduction:-

The transition from high school to university education and a medical school environment can be difficult even for the very best students ⁽¹⁾. In university, student may feel anonymous due to a large class with large number of students, and it can be difficult to communicate with the lecturer ⁽²⁾.

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It has been observed that medical school environments are extremely stressful. Fear of failure due to vast amount of content that has to be mastered in a short period of time, and an inability to cope ⁽³⁾. Many students experience frustration and failure because of their lack in studying strategies ⁽⁴⁾.

In the absence of appropriate direction, learning can be an inefficient and time-consuming process, so an important role of the teacher is to assist and guide students in their learning; to develop and define appropriate strategies to make the most effective use of time they have available to study ⁽⁵⁾.

First year medical students are mostly teacher dependent because of exposure to a new curriculum; they also show greater demand for learning resources ⁽⁶⁾. Students learning based on lecture presentations are dependent on the student's ability to effectively listen and organize concepts. Note taking and review of notes is an important activity that encourages understanding and storage of information ⁽⁷⁾.

Lecturing is the most commonly used method of teaching in higher education in spite of its limitations ⁽⁸⁾. Apart from the conventional classroom mode, lectures are now delivered through a number of new ways such as making it computer-based, web-based/on-line, video-taped or through video-conferencing and lecture handouts ⁽⁹⁾.

A lecture handout can be defined as "an instructional tool that complements a lecture resulting in improved understanding of information and test performance". Handouts have become an integral component of the lecture in undergraduate medical education ⁽⁷⁾. Study guides in the form of handouts can make a major contribution to learning ⁽¹⁰⁾.

The effective use of lecture handouts can promote active listening and enhance learning. The educator-the content expert-is in the best position to determine how to design the handout to accomplish his or her learning objectives ⁽¹¹⁾.

Handouts covering all lecture topics as study guide were valuable aid for a more organized study and can help undergraduates in coping with academic stress in first year of medical education ⁽¹²⁾. Some students assume if they have the handouts in their files, they have the knowledge in their heads ⁽¹³⁾. When used appropriately, handouts can improve student learning by structuring study time, encouraging critical thinking, preparing students for lecture, and providing opportunities for active learning during the course of the session ⁽¹¹⁾. Although handouts are widely used instructional tools, little researches has been done on conventional paper-based ⁽¹⁴⁾.

A study of this nature up to our knowledge wasn't carried out in Iraq, especially with regard to medical institutions. The current study was planned to fill the gap and to convey the students' perceptions on 'Paper-Based' lecture handouts, explore their preference to see or not to see these handouts in the classes and to give suggestions about how to improve the quality and usefulness of handouts presentations. The feedback was expected to act as a guide to educationalists in developing more efficient teaching design.

Aim of the study:

Aim of the study was to determine perception of medical students on paper-based-lecture handouts as learning tool and how this tool used by them.

Material and Method:-

This was a cross-sectional study that involved medical students in firstyear of Alkindy Medical College-University of Baghdad. The duration of the study was from September 2013 to June 2014. The study population consisted of 184 first-year medical students, only 174 returned their questionnaires giving a response rate of 94.5%.

To evaluate the perception of students on paper-based lecture handouts, students were asked to complete a questionnaire at the end of their first year. The researcher explained the study objectives to the students and both anonymity and confidentiality were guaranteed. Verbal consent was obtained from the respondents. However, they were also free to refuse to participate in the study if they so desired. The researcher investigated research questions of immediate relevance to everyday students' work, which might be difficult to investigate without having a preliminary insight.

A well semi-structured, self-administered questionnaire that contained close and open ended questions was generated and used to collect information from the students relating to their perception of paper-based-lecture handouts methods. The questionnaire design was developed through several stages. Two groups' discussions were

conducted each group consists of the researcher and one of his colleagues to discuss and comment on the questionnaire and distributed it to students.

The questionnaire is a document that composed of six pages, it consisted of five sections with a total of 20 questions. The first section consisted of the bio-data of the students, which included age, sex and living in, the second section focused on students perception of paper-based-lecture handouts and this section contain seventeen (17) parameters were analyzed on the basis of Likert scale of grading, i.e., 4(strongly agree), 3(agree), 2(uncertain), 1(disagree), 0(strongly disagree). So student grading on each parameter between (0 and 4) and student grading on all parameters range between (0 and 68) since 17 parameter multiply by 4 equal 68, the sum of all students grading on each parameter was calculated and divided by/(174 × 4 = 696) then computed the mean and percent agreement.

Validity:

Validity was assured by the process of questionnaire development. Important issues to the study objectives were identified from group discussions with colleagues and previous literatures which are regarded as fundamental strategy for content validity, in addition to that discussions and revised and supervised with my assistant and with three experts in the field, and it was modified where necessary, Moreover, pilot study was the strategy used to test the content of the questionnaire which was useful in assessing the validity of the questionnaire.

Data Analysis:

Statistical analysis was carried out using Statistical Package for the Social Sciences (SPSS version 17). Categorical variables were presented as frequencies and percentages (percent agreement). Continuous variables were presented as (Means ± SD). Independent samples t-test was used to compare means of two groups. ANOVA test was used to compare means of three groups or more. A p-value of ≤ 0.05 was considered as significant.

Results:-

A total of 174 first year medical students participated in the study. Female forming 64.4% of them, the remaining 35.5% were male.

Table 1 showed the distribution of students according to their perception regarding paper handouts. Majority (97.1%) agree or strongly agree that the paper handouts were useful, (93.7%) of them agree or strongly agree that the paper handouts make learning more easy, (77.6%) of them agree or strongly agree that the paper handouts help them to achieve better results, (94.8%) of them agree or strongly agree that the paper handouts considered as a guide before examination, (94.3%) of them agree or strongly agree with receiving complete paper handouts. More than three quarter of the students (87.4%) agree or strongly agree with receiving paper handouts before lecture while only (19%) of them agree or strongly agree with receiving paper handouts after lecture.

More than one quarter (37.9%) of them agree or strongly agree with reading other references beside paper handouts, and (4%) of them agree or strongly agree with receiving incomplete paper handouts and only

Table 1:- The distribution of students according to their perceptions on lecture handouts.

Statements	Strongly Agree (%)	Agree (%)	Uncertain (%)	Disagree (%)	Strongly disagree (%)	Percent agreement
Paper handouts are useful	113 (64.9%)	56 (32.2%)	4 (2.3%)	1 (0.6%)	0 (0.0%)	90.3%
Paper handouts make you easier to learn	102 (58.6%)	61 (35.1%)	5 (2.9%)	6 (3.4%)	0 (0.0%)	87.2%
Paper handouts save time	101 (58.1%)	60 (34.5%)	7 (4.0%)	4 (2.3%)	2 (1.1%)	86.4%
Paper handouts enough to understand	28 (16.1%)	56 (32.2%)	26 (14.9%)	51 (29.3%)	13 (7.5%)	55.02%

subject						
Paper handouts help you to achieve better results	37 (21.3%)	98 (56.3%)	25 (14.4%)	12 (6.9%)	2 (1.1%)	72.4%
Reading paper handouts as reference	37 (21.3%)	61 (35.1%)	25 (14.4%)	44 (25.3%)	7 (4.0%)	61.1%
Reading other resources with handouts	22 (12.6%)	44 (25.3%)	26 (14.9%)	59 (33.9%)	23 (13.2%)	47.5%
Consider paper handouts as guide before examination	101 (58.1%)	64 (36.8%)	2 (1.1%)	4 (2.3%)	3 (1.7%)	86.7%
Make connection between ideas	37 (21.3%)	78 (44.8%)	33 (19.0%)	17 (9.8%)	9 (5.2%)	66.8%
Handouts regard as discussion promoting tool	27 (15.5%)	60 (34.5%)	33 (19.0%)	46 (26.4%)	8 (4.6%)	57.4%
Handouts convey information in interesting way	29 (16.7%)	54 (31.0%)	32 (18.4%)	37 (21.3%)	22 (12.6%)	54.4%
Handouts allow time for questions	62 (35.6%)	60 (34.5%)	25 (14.4%)	23 (13.2%)	4 (2.3%)	71.9%
Take note important beside handouts	79 (45.4%)	54 (31.0%)	16 (9.2%)	17 (9.8%)	8 (4.6%)	75.7%
Prefer complete handouts	115 (66.1%)	49 (28.2%)	4 (2.3%)	4 (2.3%)	2 (1.1%)	88.9%
Prefer incomplete handouts	2 (1.1%)	5 (2.9%)	12 (6.9%)	55 (31.6%)	100 (57.5%)	14.6%
Prefer receive handouts before lecture	117 (67.2%)	35 (20.1%)	4 (2.3%)	12 (6.9%)	6 (3.4%)	85.2%
Prefer receive handouts after lecture	12 (6.9%)	21 (12.1%)	23 (13.2%)	47 (27.0%)	71 (40.8%)	29.3%

Table 2 revealed the mean score distributed according to gender. The mean score of the male students were 42.06+6.22 which was slightly lower than that of the female 44.16+5.92. This difference of student's score according to gender was significant one ($P=0.03$).

Table 2:- The mean differences of student's score according to gender.

Gender	n (%)	Mean+SD	P-value
Male	62(35.6)	42.06+6.22	0.03*
Female	112(64.4)	44.16+5.92	
Total	174		
SD: Standard deviation * significant			

Figure-1 showed the distribution of students according to their perceptions of the effect of handouts on lecture attendance. About half of the students 92(52.9%) reported no effect, 75(43.1%) reported that handout improve

lecture attendance, and only 7 students (4%) claim that it negatively affected attendance. The mean score varied according to response and this difference of student's score according to attendance to class was found to be significant differences ($P = 0.001$).

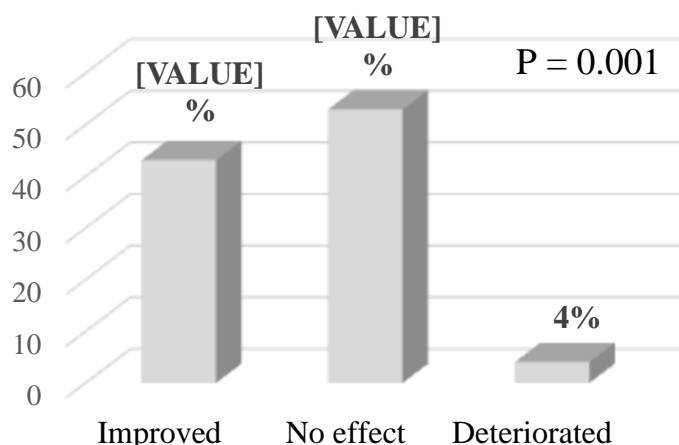


Fig1:- The effect of handouts on lecture attendance.

To find the response of the students toward some suggestions to improve the paper handouts, sixty students (34.2%) had no response. The other students 114 (65.8%) went with these suggestions at different rates, all these were shown in (table 3).

Table 3:- Students' suggestion to improve the paper handouts.

Students Suggestion	n (%)
Handouts must be, brief, well structured, in simple language, and to outline clinical applications and contain key references and definitions of new terms, written with good font and use text color and be available before lectures.	44 (26%)
Prepare handouts to be complete and make good connection between subjects.	12 (6.8%)
Teachers must not Read directly and too fast from the slides and not cover too much information in one presentation	8 (4.5%)
Allow students time during presentation for writing notes and questions.	9 (5.1%)
Give relevant examples that are not on the slides to help understanding un clear pointes.	6 (3.4%)
Deliver information in an interesting and engaging way.	5 (2.8%)
Use more pictures, diagrams, animations and images in the handouts to help learning.	30 (17.2%)
No response	60 (34.2%)

Discussion:-

The students in this study have positive perceptions toward the handouts and they would like to see more in their future classes. Austin et al study also found that students had positive responses to guided notes/instructional handouts ⁽¹⁵⁾. This could be related to that most first-year students face challenges in taking complete notes and in many cases, they prefer to be provided with complete and comprehensive notes. Moreover, they are not mature enough to manage their time for learning and to look for right references. Hartley suggests interactive handouts are better for understanding and aiding recall than an exhaustive set of notes ⁽¹⁶⁾.

Students with prepared handouts had course completion rates. Furthermore, handouts encourage active learning and increases effectiveness of class room lectures ⁽¹⁷⁾.

The other side focus on the disadvantage of extensive handouts, in this case, it tends to relieve the student of having to take meaningful notes and to later build from them a complete picture of the material. Students too often have the tendency to rely entirely on the handouts since they come from the instructor and must therefore be complete.

Furthermore, their dependence on learning from handouts is often at the expense of learning from assigned readings⁽¹⁸⁾.

It was found that students perceived handouts to be one of the most useful tools that enhance their learning environment. Students not only like the courses better, they also have a more positive impression of the instructor when handouts are used in the classroom⁽¹⁹⁾.

In our study the result focus on that taking notes during presentation was important to complete handouts (76.4%), and the paper handouts help the student to achieve better results (77.6%), this is consistent with the results of a study by Landrum who found that students learn more from the process of reviewing notes compared to taking notes, and believe that instructor notes will improve their course performance⁽²⁰⁾. And this coincides with finding in a survey conducted by Isaacs (1994), 43% of the academic staff indicated that they often or always use handouts in the classroom and feel that handouts direct the students' note taking and allow them to listen and participate more in lecture⁽²¹⁾.

This result agrees with Bligh in 2000 who found no difference between complete and incomplete handouts, in both cases students did better when lectures contained more facts and it seem that handouts enabled students to handle more information⁽¹⁷⁾.

On the other hand, Noppe did not find improved performance (significant differences in test scores) between those who received the handouts and those who did not⁽²¹⁾. Similarly, another study has showed that there was no significant improvement in students' performance in the examination when only handouts were used as an instructional aid⁽²²⁾.

And this compatible with finding of Heller, who stated that providing detailed lecture slides (complete handouts), this approach allows the students to become fully engaged in the concepts taking notes. On a broader perspective this approach creates enhanced lecture time efficiency that allows the professor to provide substantially more topics and total content over the semester⁽²³⁾.

Brazeau reported in 2006 (American Education Research Association Meeting) that students who took their own notes or were provided with partial instructor notes performed better on aspects related to memory and transfer compared to students provided with a full set of lecture notes, independent of whether the students heard the lecture or not⁽¹⁸⁾.

In controversy to our result, Bligh in his study in 2000 favored partial handouts since students with partial did better than students given either complete or lecture script⁽¹⁸⁾. A result of more recent study, suggested that type of notes did not have a significant effect on either final grades or attendance⁽²⁴⁾.

The present study indicated that majority of students would like to have paper handouts presentations before lecture, (87.4%). while only (19%) of them like receiving paper handouts after lecture. This result is consistent with Bligh who said it is important that students have acquired handouts before the lecture because it acts as a common basic ground before topics, to release time, and to reduce pressure⁽¹⁷⁾.

This finding agrees with opinion of Bligh who said when given handout before lecture can release time for discussion and other activity or relive the pressure of a crammed syllabus⁽¹⁸⁾. And this is in consistent with finding of Nelson-Wong et al. which show the majority of students prefer to have access to course presentation materials prior to classroom sessions⁽²⁵⁾.

In the current study the effect of handouts on lecture attendance showed that more than half of students reported no effect on lectures' attendance and this coincides with the study of Cornelius & Owen-DeSchryver who found no difference in attendance of lectures⁽²⁴⁾.

We found that less than fifty percent show improvement in lecture attendance, this result coincides with finding in asurvey conducted by Szabo & Hastings (2000) which show Over 65% of the students felt that handout is motivating them to come to the lectures⁽²⁶⁾. Furthermore, students reported that the provision of lectures outlines with blanks included for students to fill in would encourage students to come to class⁽²⁰⁾. On the contrary in 2005,

Fjortoft reported that one of the main motivators for class attendance by first and second year professional pharmacy students was handouts were not provided⁽²⁷⁾.

Few students in our study claimed that handouts resulted in deterioration in lecture attendance, this is in consistent with the result of a study stated that students in the full handouts condition reported a negative effect on lectures attendance⁽²⁸⁾.

In the current study, some suggestions made by students to improve the quality and effectiveness of handouts were discussed in results (4.8) The students expected the handouts to be clear, brief, well structured, written in simple language, and to outline clinical applications and contain key references and definitions of new terms and use more pictures, diagrams, animations and images to help their learning. Unfortunately, no one student answer or comment about other methods of handouts and this may due to fact that students not exposed to different type of handouts.

Conclusion:-

This study showed that paper-based lecture handouts as a tool is very useful to students. First year medical students' expectations were positive towards handouts. They considered it as an important and essential teaching tool, since it makes learning easier, save time, help them understanding the material, internalizing and act as a guide for learning and revision before the examination to achieve better results. They preferred receiving handouts beforehand to get general view of the subject and identify unfamiliar terms and concepts. They also demonstrated that handouts improved their class attendance.

Recommendations:-

Improve quality of the handouts in order to improve student learning. Clear complete handouts, including discussions or activities, allow time for questions, show connections between the ideas presented, and to be given to students before lecture all are important in this direction. In order to create effective and meaningful learning experiences for students, teachers should be aware of paper- based lecture handouts overload, which is one of the major obstacles to learning.

Conflict of interest:

There was no conflict of interest

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