JOURNAL FOR INNOVATIVE DEVELOPMENT IN PHARMACEUTICAL AND TECHNICAL SCIENCE

Volume-2,Issue-8 (Aug-2019)
ISSN (O) :- 2581-6934

The Impact of Curriculum Change on Student Stress and Workload

Dr. Sunilkumar B Dodmani [1]

Abstract- ***In the fall of 2016 The University of Calgary Medical School implemented a revised undergraduate curriculum. Instruction of the undergraduate program shifted from a system-based curriculum to one organized by clinical presentations (CP). Core documents and curriculum delivery underwent significant change. This study examined how change to the CP curriculum affected student stress and workload. To monitor levels of stress and perceived workload, the first class to experience the CP curriculum was administered a year-end questionnaire that contained several stress related items. Measures of student stress were compared to stress levels reported by first year students from the previous curriculum. Sixty-six of 68 (97%) students responded to the questionnaire. The overall level of stress was moderate and did not differ from the overall stress reported by students of the previous curriculum. When stress due to the curriculum was examined, students of the previous curriculum reported significantly more stress from both "volume" and "complexity" of material while students in the CP curriculum reported significantly more stress due to "ambiguity of expectations". Students in the CP curriculum viewed the workload of most courses to be manageable. Female students perceived the workload at the beginning of medical school to be heavier than did male students. Implications of these findings are discussed.***

Key words- ***Female Student Male Student Academic Medicine Curriculum Change***

1. Introduction

It is widely recognized that attending medical school is stressful. 1.6 The impact of stress has been identified as a major contributing factor to the decreasing psychological health of medical school students 6 Consequently, in light of recent curricular changes, efforts to evaluate curricular innovations have included student stress and/or consequences of stress as one of several variables studied. For example, investigators at The New Mexico School of Medicine reported students in the first two years of a new PBL, student-centred curriculum to be significantly less distressed than students in the first two years of a traditional track, as measured by the Symptom Questionnaire.7 The PBL format appeared to be more supportive, allowing students to deal more effectively with various stressors. Student stress was examined in the evaluation of the New Pathway curriculum at Harvard Medical School.s The New Pathway curriculum, which utilizes PBL, ran parallel to the traditional lecture-based curriculum. Based on questionnaire data, students from the New Pathway curriculum described their preclinical years to be more "stressful, engaging, and difficult" than students of the traditional curriculum. Causes of stress related to intratutorial conflicts and the uncertainty regarding the nature and amount of material to be studied. In addition to student stress, perceived workload of a program has been included as a component in the evaluation of students' experience with curricular innovation. According to researchers at Maastricht, "workload is an important indicator of the quality of instruction because it exemplifies the extent to which a teacher has succeeded in matching the instructional necessities with the capabilities ofthe students".9 That is, workload demands that are excessive will produce study delay and attrition. Consequently, both student stress and workload are important features to consider in the evaluation of innovative curricula. The University of Calgary Medical School recently implemented an innovative curriculum which is organized

according to clinical presentations (CP). The purpose of this study was: I) to measure the impact of the CP curriculum on student stress and workload and 2) to determine whether the stress of students in the CP curriculum differed from the stress reported by students of the previous system-based curriculum.

Method

Systems-based curriculum

The systems-based curriculum, which organized content according to 12 body-systems, was implemented at The University of Calgary in 1968. It was a competency based, integrated curriculum in which students were evaluated on a pass/fail basis. It became evident that because learning was compartmentalized to system-dependent disease groups, the development of clinical reasoning among students was limited.

Clinical presentation curriculum

The Faculty of Medicine at The University of Calgary recently implemented a revised undergraduate curriculum which is described in detail elsewhere. to Briefly, in the CP curriculum the entire three-year undergraduate program is organized according to 120 clinical presentations. A clinical presentation is defined as the common and important way in which a person, group of people, community, or population present to a physician. The 120 clinical presentations were based on the belief that the manner in which the human body responds to an infinite number of injuries is finite and stable over time. Basic science instruction, which is integrated into each clinical presentation, is learned through out the undergraduate program. Each clinical presentation contains terminal objectives which de scribe the expected level of student performance at graduation. Terminal objectives are supported by enabling objectives which define the knowledge, skills, and attitudes necessary to attain the terminal objectives. Instructional strategies vary with the objectives to be learned. To maximize the development of clinical reasoning among students problem solving schema are provided. Student evaluation follows a pass/fail format. Implementation of the CP curriculum was phased-in beginning in the fall of 1994 when only the incoming class received the revised curriculum.

Subjects

Participants in the study consisted of 44 male and 22 female students (97%) from the Class of 1997 who were the first to experience the CP curriculum. The class had a mean age of 25.8 years at entry. Thirty-four male and 24 female students (81%) from the Class of 1994 who were educated under the systemsbased curriculum were also study participants. Their mean age at entry was 25.4 years.

Data collection and analysis

Near the end of first year the Class of 1997 was administered an extensive questionnaire that contained six stress related items. Since the intent of the study was to examine student stress and then compare results to levels detected in students of the previous curriculum, items employed were those developed by Toews who assessed student stress at The University of Calgary in 1991.4 The items selected asked about one's overall level of stress plus various sources of stress related to the curriculum including volume of material, complexity of material, time available, examinations, and ambiguity of expectations. The items, which were based on stressors reported in the literature, had face validity. Students responded to each item using a 7- point Likert scale (1 = No Stress; 7 = Extreme Stress) and were asked to list in order the three primary sources of stress during the past academic year. To allow comparison between the two cohorts of students, data generated by the Class of 1994 was extracted from the 1991 study. The Class of 1997 also rated the perceived workload of each course using a 5-point Likert scale (1 = Very Minimal; 3 = OptimallIdeal; 5 = Very Excessive). A two-way MANOV A (curriculum by gender) was used to analyse the stress data and one-way MANOV A was used to analyse the workload data.

Results

Student stress Table 1 presents mean stress scores of students from the CP and systems-based curricula. The analysis showed no interaction or main effect for gender but a significant main effect for curriculum was observed. The univariate F-tests on the six dependent measures revealed no significant difference between the two groups of students on overall level of stress and sources of stress including time available and examinations. However, significant differences

ISSN:-2581-6934|www.jidps.com

were observed between the two groups of students on sources of stress including volume of material ($F = 5.5$, $df = 11118$, $P < .05$), complexity of material ($F = 6.4$, $df = 11118$, $P < .05$) and ambiguity of expectations ($F = 16.55$, $df = 1/118$, $P < .001$). Considering all possible sources of stress 50% of the students in the CP curriculum listed examinations as the primary source. Other sources listed included personal/family matters (29%), ambiguity of expectations (23%), volume of material (20%), and time (20%).

Workload

Table 2 depicts mean workload ratings reported by male and female students for each first year course. Courses are listed in the order they appear in the program. Data analysis showed a significant main effect for gender with the univariate F-tests indicating a significant difference on workload only for the Principles for Medicine course ($F = 9.05$, $df = 1/62$, $P < .01$).

Discussion

Stress reported by first year students at a time of curriculum revision was not as high as what one might expect. The overall level of stress reported by first year students in the new CP curriculum was moderate ($M = 4.38$) and did not differ from the overall level of stress reported by first year students from the previous curriculum. In view of the literature, the findings of moderate stress reported by first year students suggests that stress of medical school may be manageable at first but intensifies in later years. Evidence that stress increases as students progress through medical school has been provided.! 2 The present study also

Table 1: Mean (SE) stress scores of students from the CP and systems-based curricula.

Stress Categories	CP Curriculum		Systems-based Curriculum	
Overall Stress	4.38	(.17)	4.53	(.13)
Volume of Material	4.58	(.17)	5.221	(.15)
Complexity of Material	3.11	(.16)	3.781	(.19)
Time Available	4.65	(.21)	5.05	(.16)
Exams	5.11	(.16)	5.43	(.15)
Ambiguity of Expectations 4	4.57	(.20)	3.41 1	(.20)

Table 2: Mean (SE) workload ratings by gender for each first year course in the CP curriculum.

Course	Male		Female	
Principles for Medicine	3.32	(.14)	3.951	(.14)
Reticulo-Endothelial	2.70	(.10)	2.73	(.12)
Musculoskeletal and Skin	4.07	(.13)	4.36	(.14)
Cardiovascular	3.59	(.10)	3.55	(.14)
Respiratory	3.09	(.08)	2.95	(.10)
Renal & Electrolyte	3.58	(.12)	3.59	(.14)
Endocrine-Metabolic	3.14	(.09)	3.27	(.12)
Integrative Course	2.16	(12)	2.43	(.15)

Reference

1. Alexander DA, Haldane JD. Medical education: A student perspective. Medical Education 1979;13:336–341.CrossRefGoogle Scholar
2. Huebner LA, Royer JA, Moore J. The assessment and remediation of dysfunctional stress in medical school. Journal of Medical Education 1981;56:547–558.Google Scholar
3. Firth-Cozens J. Stress in medical undergraduates and house officers. British Journal of Hospital Medicine 1989;41:161–164.Google Scholar
4. Toews JA, Lockyer JM, Dobson DJG, Brownell AK. Stress among residents, medical students, and graduate science (MSc/PhD) students. Academic Medicine 1993;68(10):S46–48.CrossRefGoogle Scholar
5. Wolf TM. Stress, coping and health: Enhancing well-being during medical school. Medical Education 1994;28:8–17.CrossRefGoogle Scholar
6. Mosley TH, Perrin SG, Neral SM, Dubbert PM, Grothues CA, Pinto BM. Stress, coping, and well-being among third-year medical students. Academic Medicine 1994;69:765–767.CrossRefGoogle Scholar
7. Moore-West M, Harrington DL, Mennin SP, Kaufman A, Skipper BJ. Distress and attitudes toward the learning environment: Effects of a

ISSN:-2581-6934|www.jidps.com

curriculum innovation. Teaching and Learning in Medicine 1989;3:151–157.CrossRefGoogle Scholar

8. Moore GT, Block SD, Style CB, Mitchell R. The influence of the new pathway curriculum on Harvard medical students. Academic Medicine 1994;69:983–989.CrossRefGoogle Scholar
9. Snellen-Balendong H, Schmidt HG. Perceived workload as an indicator of the quality of education: The case of Maastricht. In: Nooman ZM, Schmidt HG, Ezzat ES, editors. Innovation in medical education: An evaluation of its present status. New York: Springer, 1990;390–403.Google Scholar

ISSN:-2581-6934|www.jidps.com