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ABSTRACT

Altering the age of a patient in a problem-based curriculum should encourage students to explore ethical issues related to human development. To assess the influence of a patient's age on problem-based tutorial discussion, the relevant discussion categories and the numbers of age-related discussions were compared. Subjects were four groups of six students in the undergraduate problem-based learning medical curriculum of a Canadian university. Groups, led by experienced clinical tutors, studied one of three versions of a problem, with the major difference being the patient's age. Less than 3% of the total tutorial time was devoted to age-related discussion and very few age-related objectives were achieved. Discussions were similar regardless of the patient's age, in that all emphasized the biological nature of the disease. Explanations are offered for why these results differ from previous research. (Contains nine references and two tables.) (SLD)

AGE AS A CONTEXTUAL CUE IN PROBLEM-BASED LEARNING

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ABSTRACT

Altering the age of a patient in a problem-based curriculum should encourage students to explore clinical issues related to human development. To assess the influence of a patient's age on problem-based tutorial discussion, we compared the relevant discussion categories and the number of age-related discussions. Groups studied one of three versions of a problem, with the major difference being the patient's age. Less than 3% of the total tutorial time was devoted to age-related discussion and very few age-related objectives were achieved. Discussions were similar regardless of the patient's age; all emphasizing the biological aspects of the disease. Explanations for why these results differ from previous research are offered.

AGE AS A CONTEXTUAL CUE IN PROBLEM BASED LEARNING

How is a middle aged patient with disease X different from an elderly or young patient with the same disease? From a clinical perspective the differences may be significant, including the epidemiology of the disease, treatment course, and unique demands relevant to the patient's age. Patient traits, including gender, age, ethnicity and values, impact on patient management. Students need to learn the subtle differences of patient care determined by these characteristics. Part of the rationale behind problem-based learning (PBL) is that more learning occurs in context.[1-3] Thus, problem developers include patient details in order to provide a clinical context for learning. The assumption is that students will learn more than just disease characteristics when discussing a clinical problem. The age of the patient is a variable which may be altered to encourage students to explore clinical issues related to human development. This research examined the extent to which different ages, and the addition of specific age-related details to a problem, influence the tutorial discussion.

While there has been a large literature published on problem-based learning, few studies have focused on patient characteristics, and their implications for learning. The context and clinical details provided in a problem play an important role in facilitating learning, and recall of information.[1,3,4] The hypothesis to be tested here is that varying only the age of patient and age related details, will have an impact on some of the tutorial discussions. Previous research by these authors [4] found that the age of the patient had a direct influence on physiotherapy students' tutorial discussions. In line with the curriculum planners' expectations, some of the discussion varied depending on the age of the patient, while much of the basic discussion of issues remained constant. The present study attempted to extend this finding to medical students.

Purposes:

1) To study the influence of varying the patient's age and age-related details on problem-based tutorial discussion, 2) to test the assumption that students learn the objectives of a problem and 3) to compare the results of this research to previous similar work done with physiotherapy students.

Method

Description of Undergraduate Medical Program and Problem. This research was conducted within the undergraduate medical program at McMaster University. The main forum for preclerkship learning in this program consists of problem-based (PBL) discussions in small groups with a trained faculty tutor. Throughout this program, the curriculum stresses a broad definition of health and illness including the three perspectives of biology, behaviour, and population as they relate to the disorder. Relevant developmental issues are continuously interspersed. Tutors are given a guide which lists all of the appropriate learning objectives from these perspectives for each problem. These objectives should be studied during the tutorial discussions relevant to each problem. If the discussion does not naturally cover these topics the tutors are expected to guide the tutorials to ensure appropriate coverage.

One preclerkship year is devoted to the study of organ systems, with the students concentrating on one system per month. Within each organ system, tutorial groups choose the problems to be discussed. Groups generally discuss two problems per week in order to cover the majority of problems for each system. Each tutorial is 2.5 hours long and is scheduled twice weekly.

Age was varied in three versions of a problem describing a patient with GI disease. We also developed three supporting tutor's guides for this study. This specific problem was chosen because, in the opinion of the curriculum planners, age was a relevant vari ble in this particular disorder. The physiology and management differ as a function of age. In version 1 and 2, the patient was either 43 or 73 years old, and was in hospital for diagnosis and management of recurrent bleeding ulcers. Version 3, (augmented elderly), contained additional details about the elderly patient's life (e.g. pension, daily activities, social support, etc.). These details were added to draw attention to the elderly status of the patient and particular gerontological issues relating to his care. For all three versions, the basic problem was the same except for details which were altered in order to be consistent with the patient's age. The core content relating to the GI system remained the same, but the objectives relating to human development differed. Although age was of secondary importance, there were a variety of socio-psychological and biological issues to which the age of the patient were relevant. The age of the patient and the total number of objectives for each perspective, as listed in the tutor's guide, were: 43 year old - 10 population including 3 age-related objectives; 12 behaviour including 1 age-related objective; and 11 biology including 1 age-related objective. For both elderly versions there were: 12 population including 6 age-related; 17 behaviour including 6 age-related; and 15 biology including 3 age-related objectives. The biological objectives required greater content mastery than the other perspectives. Each version was randomly assigned to six tutorial groups with 6 students per group. The number of groups discussing each version was noted.

Participants. Four groups of six second year, experienced PBL students and their physician tutors were asked to participate, i.e. one group each for the middle aged and

augmented elderly, and two groups (noted on Table 1 as 73a & b) doing the non-augmented elderly version. Groups were selected based on the following criteria: 1) tutors must be experienced, be a clinician, not have been involved with the development of the problem or with the research and not be a geriatrician or pediatrician (all tutors were specialists in internal medicine), 2) none of the students should have been previously identified as having special education or learning needs, 3) none of the groups should have been previously identified as being dysfunctional.

Procedure. All of the tutorial discussions relating to this problem were observed by a research assistant and audio-taped. The observer collected data on group interactions and affect. The data from this study are based upon observations of the students and tutors conducting their normal tutorials. Students and tutors were asked to comment on any deviations, if any, from their usual tutorial routine. Tutors did not receive any problem-specific training or cueing for the problems which we studied. All tutors and students involved with this unit had given their permission to participate in this study, but were unaware of the purposes of the study.

As indicators of perceived importance and commitment to the topics, the learning issues that the group decided required further study and the resources utilized in studying the problem were documented by the observer. One week after completing the discussion of this problem, each of the observed students was asked to list in writing all of the concepts he or she remembered discussing and studying in relation to the problem. Also, one week later, the observed tutors were asked to list all of the concepts their groups discussed. This recall task was done as an indication of perceived importance and of student learning. Concepts were defined

as recalled, if at least half of the students within a group included the concept on their individual lists. Both tutors and students were given the opportunity to comment on any unusual aspect of their tutorial discussions or study of this GI problem, and to indicate if these tutorials were similar to others in this GI unit. These activities took place in individual interviews with the research assistant.

Data Analyses. Data analysis began by reviewing the transcribed tapes to identify which tutorial discussions included age-related concepts, and whether the students or the tutor had initiated the discussion. Each discussion, longer than 10 seconds, that included age-related concepts was analyzed by the three authors using an open coding technique as described by Strauss and Corbin (1990). All age-related concepts were listed and compared to determine any similarities. Similar concepts were grouped together to form discussion categories relating to the three perspectives. The time spent in age-related discussion was calculated as a percentage of the total tutorial time. The three authors evaluated the information gathered from the interviews and categorized then into the age-related or other concepts.

Results

The tutorial groups spent three hours or less on this bleeding ulcer problem, with less than 3% of this time devoted to age-related discussion. Table 1 outlines the number of incidents of age-related concept discussions and the recall of relevant discussions one week later. The vast majority of both tutorial and self-reported independent study time was devoted to learning about the objectives concerning ulcers, anatomy, physiology and organ pathology, regardless of the patient's age. These concepts were also those best remembered by the students one week later. Little time was spent in age-related discussions and few age-related objectives were covered. One

age-related learning issue, age as a risk factor, was identified in the 73 b group. This was tne only age-related concept recalled by the students. None of the other groups identified any age-related learning issues, nor recalled any such discussions.

Table 2 shows the percentage of age-related concepts discussed by perspective. This percentage is quite varied with the range from 0% to 66%, yet in half of the categories none of the age-related concepts were even discussed briefly. The discussion of age-related concepts was often superficial and based upon a vague understanding rather than coming directly from their reading. Tne objectives relating to biological effects of aging were not discussed in one of the groups with the elderly patient. None of the groups discussed any age-related behaviour objectives even though the tutor's guide was weighted towards behaviour. All of the groups discussed at least one age-related population objective, but only covered 1/4 to 1/3 of the total relevant population objectives. Within the relevant issues that were discussed, the students initiated 82% of these age-related discussions across groups. The interviews with the students and tutors confirmed that the tutorial discussions for this problem were typical of those in this unit.

Two out of 6 possible groups discussed the augmented elderly version of the problem. In the other versions, 5 out of 6 groups discussed the problem. If the group studied this GI problem, the addition of gerontological details had little effect on tutorial discussion. This was highlighted by the similarity between groups in issues discussed and the limited time devoted to particulars concerning the patient's life situation, regardless of the version of the problem.

Discussion

In contrast to a previous study where physiotherapy (PT) students spent an average tutorial time of 8% discussing age-related issues,[4] changing the patient's age had little impact on these tutorial discussions. Possible reasons for these differences in results may include: 1) the importance of the role of the tutor; 2) a difference between the perceived real objectives of the problem among the students, tutors and curriculum planners; and 3) the number of objectives to study within a short time. These reasons will be further discussed in the following paragraphs.

The results indicate the importance of the tutor in terms of what is discussed in tutorials. In this study these tutors were not active enough in guiding and balancing the discussion as evidenced by the small number of tutor initiated age-related discussions. These tutors may have felt that since they have been instructed not to explain content, they should remain silent.[6] Instead of silence, they could have initiated discussion through questions. Due to the tutor's clinical experience, they should be quite aware that age enters into the disease process and patient management.

There must be a congruence between what the students, tutors and curriculum planners think should be discussed in the problem. In this unit, mastery of the biology of the GI system is perceived by the tutors and students as the key content regardless of written objectives in the tutors' guide. The medical students and their tutors perceive that they should be mastering a specific organ system in relation to the problem. For most of them, this means focusing on the biological details rather than varied manifestations and management regiments, which depend on the patient's particulars, including his age. This is in conflict with the overall curriculum plan for the program which stresses a broad approach to all problems.

In terms of the amount of content to be mastered, it is important to consider the amount of time the students have to discuss the problem and the amount of time they have for studying. The time allowed for each PT problem in the previous study is almost double that of the MD program per problem. Medical students spent one to two hours less per problem than the PT students did. The MD schedule appears to leave them little time to discuss other relevant concepts.

This study did not replicate previous research,[7-9] indicating that students cover the majority of the planned objectives for the problems. Perhaps this is because there were too many objectives. These students did cover the objectives perceived to be of primary importance but did not discuss most or all of those perceived to be of secondary importance. The fact that they did not meet the expectations of the curriculum planners in terms of mastering all objectives indicates a failure of the system which needs to be addressed.

If there is a difference between the perceived real objectives of the problem and too many objectives to cover in a short period of time, the tutorial groups tend to cover just what they perceive to be essential. Then the information about the patient becomes an extra detail which the students tend to ignore. This may have been the case with these medical students. These results have direct implications for curriculum designers. When students are rushed in tutorial discussions because there is too much content to be learned in too short a time, or if they do not see the importance of the patient as a human being thereby focusing on an organ system which is not functioning properly, as they appear to be with this problem in this unit, the information about the patient may become extra details which the students tend to ignore. The avoidance of discussing the patient's age and other individual characteristics may violate a rationale for

problem-based learning, that more learning occurs in context.[2] However, when students have adequate time to discuss for each problem and there is a congruency between the objectives of the problem and the perceived goals of the problem, they should discuss issues of secondary importance. If one of the aims of the problem is to discuss developmental issues, the age and contextual cues need to be carefully chosen. There is an increasing awareness of the effect of aging on disease and the demographics of our greying society. Thus, if the patient in the problem is over 65 years old, tutors and students may feel somewhat compelled to discuss geriatric concepts. Conversely, if the aim of a problem is to focus on biological concepts, then perhaps the problem should be written based on a middle aged patient and include few patient specific details. The findings of this study have implications for other descriptive details, such as gender, ethnicity and socio-economic status, which may be provided in the problem.

When this study was reported locally, the curriculum committee seriously considered the recommendations to make problems simpler, and with fewer objectives. Currently this program is investigating how to redesign their curriculum, using shorter problems with fewer objectives, in order to ensure adequate coverage of all concepts. They are also developing problems which focus on all three perspectives

Conclusion Though the patient's age may appear to be an important determinant in tutorial discussion, the relationship is not straight forward. There are many other variables which influence the discussion. These variables include the role the tutors play in guiding or not guiding the discussion; the congruency of the expectations among the students, tutors and curriculum planners in terms of the real or important objectives of the problem; and the amount of time allotted in relation to the amount of content to be covered.

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Table 1 MD Study: Age-related categories and number of incidents of age-related discussion

Age-related discussion categories	Number of incidents of age-related discussion			
	43 yr	73 yr a	73 yr b	augmented 73 yr
Biological Concepts				
-effect of age on drug actions/interactions				1
-effect on metabolism		1		
-effect on pain perception		1		1
Behaviour Concepts	0	0	0	0
Population Concepts				
-significance of age in making a different diagnosis	1	1		
-age as a risk factor		2	1*~	2
-significance of age to do a diagnostic test			1	1
Management Concepts				
-treatment as consequence of age\effects of age on management		1		
Total number of discussions	1	6	2	5
% tutorial time spent in age related discussion	0.9%	2.46%	1.3%	2%
Total tutorial time spent on this problem	175 min.	130 min.	190 min.	165 min.

* = was identified by students as a learning objective(s) for group.
~ = was recalled by the students.

Table 2. Percentage Age-Related Concepts Discussed By Perspective

Perspective	43 year	73 year (a)	73 year (b)	Augmented 73 year
Biological Concepts	0%	66%	0%	66%
Behavioural Concepts	0%	0%	0%	0%
Population Concepts	33%	50%	33%	50%

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