

A Questionnaire Based Assessment of Attitude, Perception and Feedback of Medical Undergraduates on Teaching Learning Methodology and Evaluation Methods in Pharmacology

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ABSTRACT

BACKGROUND

Feedback from the students in the form of a questionnaire helps to fill up the lacunae and in turn leads to requisite modifications required for the improvement of the subject. Reviewing of the teaching methodology and evaluation methods regularly by taking feedback from the students helps in improvement of the same and provides a scope for the alteration of the curriculum. Feedback also helps in enhancement of the students' performance. We wanted to evaluate the attitude, perception and feedback of medical undergraduates studying in Acharya Shri Chander College of Medical Sciences, on teaching learning methodology and evaluation methods undertaken in pharmacology.

METHODS

A cross-sectional questionnaire based observational study was conducted among the undergraduates from 5th and 7th semester of MBBS. A total of 174 students were enrolled in the study and they were required to fill up the questionnaire which contained questions on teaching learning methodology and evaluation methods in pharmacology.

RESULTS

Significant number of students (53.44%) regarded pharmacology as useful, practically important and interesting. Majority of the students (27.01%) favoured chalk blackboard lectures. Most interesting topic amongst students was CNS (20.68%), followed by ANS (18.96%). Clinical case sheet discussion (30.45%) was the favourite practical. Many students (29.88%) preferred to study from textbooks only. Majority of the students (35.05%) rated send up exams as the most useful evaluation method in preparation for the university professional exam. Maximum students (72.98%) considered assessment in pharmacology as fair.

CONCLUSIONS

The overall view of the students has been positive towards teaching learning methodology and evaluation methods adopted in pharmacology in our institution. The present study has provided valuable inputs and made us aware of the needs and expectations of the students, which in turn would help in planning the curriculum and improvisation of teaching and evaluation methods employed in our Institution.

KEYWORDS

Attitude, Perception, Feedback, Teaching Learning Methodology, Evaluation Methods, Pharmacology, Questionnaire

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BACKGROUND

Pharmacology is an integral subject of undergraduate medical curriculum. It is considered as the backbone of rational pharmacotherapeutics. It is crucial that the medical undergraduates appreciate pharmacological principles and are able to relate and apply them in clinical practice.^{1,2} Traditionally pharmacology has been taught by didactic lectures with emphasis being laid on factual information about the drugs and very less importance being given to the clinical and applied aspect. For decades dispensing pharmacy and experimental pharmacology exercises have been the mainstay of practicals in pharmacology. As pharmacology is one of the dynamic branches of medical sciences, the teaching methodology in the subject has evolved over a period of time to keep pace with the advancement in medical science and changing demands in the society.³ Although pharmacology is a pivotal subject in the field of medical sciences, but many medical undergraduates regard it as a dry and volatile subject. Many find it burdensome to remember and recall the names of various drugs, classification of drugs and various concepts in pharmacology.⁴

Lately a lot of emphasis is being laid on the student's view of their educational experiences to assess the effectiveness of courses and teaching methods.⁵ In relation to pharmacology, student's attitude is their mindset towards the subject, while student's perception comprises an assortment of effective methodologies for improvement in teaching the subject. Whereas, student's feedback is an effective tool for alteration of curriculum in pharmacology and helps to make the subject more interesting and practicable. Student's feedback provides important insights into improvement of education and enhancement of their performance.⁶ Feedback is an ongoing review of strengths and weaknesses. It is effective, if it is given timely in a constructive manner with a positive attitude for improvisation. Reviewing of the teaching methodology and evaluation methods regularly by feedback from the students helps in improvisation of the same.⁷ Feedback from the students in the form of a questionnaire helps to fill up the lacunae and in turn leads to requisite modifications required for the improvement of the subject. Hence the present study was designed and undertaken.

We wanted to evaluate the attitude, perception and feedback of medical undergraduates studying in Acharya Shri Chander College of Medical Sciences, with regard to teaching, learning methodology and evaluation methods undertaken in pharmacology.

METHODS

A cross sectional questionnaire based observational study was conducted in Acharya Shri Chander College of Medical Sciences (ASCOMS) and Hospital, Jammu, over a period of two months, in September and October 2019. Institutional Ethical Committee approval was taken before the

commencement of the study. 174 medical undergraduates studying in 5th and 7th semester participated in the study. Nearly all the students voluntarily participated in the survey after being briefed in detail about the goals and methods of the study. Informed consent was taken from them. Students who were not willing to participate in the study or were absent on the day of the study were excluded. The survey was anonymous and all obtained data was kept confidential. The questionnaire was developed after a literature review of comparable studies.^{3,6,8,9} and was validated by conducting a pilot study on a sample of 20 medical undergraduates, who were finally excluded from the study. The questionnaire was given to different batch students on different days and they were instructed to fill the questionnaire within the stipulated time of 30 minutes.

The questionnaire was divided into three sections. The questionnaire started with the demographic information of the students (age, gender and 5th /7th semester). The first section of the questionnaire contained six general questions and assessed the attitude of the students regarding pharmacology. All the questions in this section were multiple choice questions and the result was tabulated in percentage. The second section of the questionnaire contained six questions and assessed the attitude and perception of the students regarding teaching and evaluation methods used in pharmacology. Out of six questions, five were multiple choice questions and one was an open ended question. The result was tabulated in percentage. The third section of the questionnaire contained six questions related to the student's learning methodology. All the questions in this section were multiple choice questions and the result was tabulated in percentage.

RESULTS

| Sl. No. | Statement | Options | n (%) |
|---------|---|---|--|
| 1. | Knowledge about pharmacology before 2 nd professional | a) Yes b) No c) Somewhat | 65 (37.35%) 28 (16.09%) 81 (46.55%) |
| 2. | Opinion of seniors regarding pharmacology | a) Very useful, practically important & interesting b) Boring & useless c) Interesting & useless d) Useful & interesting e) Useful but boring f) Other | 54 (31.03%) 5 (2.87%) 2 (1.14%) 42 (24.13%) 62 (35.63%) 9 (5.17%) |
| 3. | Opinion regarding pharmacology | a) Very useful, practically important & interesting b) Boring & useless c) Interesting & useless d) Useful & interesting e) Useful but boring f) Other | 93 (53.44%) 0 (0%) 0 (0%) 41 (23.56%) 30 (17.24%) 10 (5.74%) |
| 4. | Comparison of pharmacology in relation to other MBBS subjects | a) Above all in subjects b) Average, same as other c) Useless, not important d) Other | 44 (25.28%) 118 (67.81%) 0 (0%) 12 (6.89%) |
| 5. | Opinion about pharmacology to be taught after 2 nd professional | a) Yes, regular lectures on drug therapy b) Only few lectures on recent advances c) Orientation course during internship d) No, enough of pharmacology | 42 (24.13%) 82 (47.12%) 36 (20.68%) 14 (8.04%) |
| 6. | Opinion about optimal time adequate for 2 nd professional teaching | a) More than 2 years b) 2 years c) 1 and half years d) 1 year | 2 (1.14%) 11 (6.32%) 98 (56.32%) 63 (36.20%) |

Table 1. General Information

| Sl. No. | Statement | Options | n(%) |
|---------|---|---|---|
| 1. | Most interesting teaching method in pharmacology | a) Chalk blackboard lectures b) Audio visual aided lectures c) Interactive class d) Tutorials e) Student seminars f) Clinical pharmacology g) MCQ based study | 47 (27.01%) 24 (13.79%) 27 (15.51%) 10 (5.74%) 12 (6.89%) 34 (19.54%) 20 (11.49%) |
| 2. | Topics to be added as part of regular teaching to make pharmacology more interesting & useful | a) Integrated teaching b) Problem based learning c) Student seminar d) Group discussion e) Micro Teaching in groups of 4 to 6 f) Case study g) Quiz | 15 (8.62%) 36 (20.68%) 9 (5.17%) 19 (10.91%) 14 (8.04%) 56 (32.18%) 25 (14.36%) |
| 3. | Special topics should be discussed in lecture/practical of pharmacology | a) Paediatric pharmacology b) Geriatric pharmacology c) Rationality d) Dose schedule and calculation e) Drug administration procedure f) Drugs used in special conditions; renal & hepatic dysfunction, emergency drugs. | 29 (16.66%) 17 (9.77%) 11 (6.32%) 18 (10.34%) 33 (18.96%) 66 (37.93%) |

Table 2. Teaching Methods

| Sl. No. | Statement | Options | n(%) |
|---------|--|--|---|
| 1. | Usefulness of evaluation methods in preparation for university professional examination | a) Send up examination b) Terminal examination c) Multiple choice questions d) Tutorials e) Viva-Voice | 61 (35.05%) 39 (22.41%) 30 (17.24%) 18 (10.34%) 26 (14.94%) |
| 2. | Assessment system in pharmacology is fair | a) Agree b) Disagree c) Not Sure | 127 (72.98%) 13 (7.47%) 34 (19.54%) |
| 3. | Assessment process is transparent | a) Agree b) Disagree c) Not Sure | 123 (70.68%) 16 (9.19%) 35 (20.11%) |
| 4. | Assessment concentrates on ability to acquire facts rather than on the development of problem solving skills | a) Agree b) Disagree c) Not Sure | 101 (58.04%) 17 (9.77%) 56 (32.18%) |
| 5. | MCQs need to be included in the assessment | a) Agree b) Disagree c) Not Sure | 154 (88.50%) 6 (3.44%) 14 (8.04%) |

Table 3. Evaluation Methods

| Sl. No. | Statement | Options | n(%) |
|---------|--|---|--|
| 1. | Most interesting topic | a) General Pharmacology b) Autonomic Nervous System c) Cardiovascular System d) Central Nervous System e) Endocrine Pharmacology f) Chemotherapy g) Autacoids h) Gastrointestinal System i) Respiratory System | 18 (10.34%) 33 (18.96%) 30 (17.24%) 36 (20.68%) 27 (15.51%) 4 (2.29%) 7 (4.02%) 13 (7.49%) 6 (3.44%) |
| 2. | Preferred study material to learn pharmacology | a) Textbooks only b) Handy/Key books only c) Teacher's class notes d) Other's notes e) Self-prepared notes f) Combination | 52 (29.88%) 6 (3.44%) 34 (19.54%) 1 (0.57%) 34 (19.54%) 47 (27.01%) |
| 3. | Pattern of study in pharmacology | a) Regular because of interest b) Regular for gaining more knowledge c) Regular due to tests and interactive classes d) Only during tests and exams e) Shall study only for university exam | 44 (25.28%) 83 (47.70%) 35 (20.11%) 12 (6.89%) 0 (0%) |
| 4. | Method of learning pharmacology | a) Cramming/mugging b) Understanding c) Grasping d) Combination | 8 (4.59%) 50 (28.73%) 3 (1.72%) 113 (64.94%) |
| 5. | Most interesting pharmacology practical | a) Prescription writing b) Criticism & rewriting of prescription c) Spotters d) Pharmacy exercises e) Experimental exercises (Computer Assisted Learning) f) Clinical case sheets g) Dose calculations h) Pharmacotherapeutics | 33 (18.96%) 3 (1.72%) 15 (8.62%) 10 (5.74%) 30 (17.24%) 53 (30.45%) 10 (5.7%) 20 (11.49%) |

Table 4. Learning Methodology

| A | Individual Learning Approaches | |
|---|---|--|
| | Right Time for Exam Preparation | n(%) |
| | a) 1 month before exams b) 2 months before exams c) 3 months before exams d) 6 months before exams | 34 (19.54%) 36 (20.68%) 54 (31.03%) 50 (28.73%) |
| | Method Used to Memorise Drug Names | n(%) |
| | a) Mnemonics b) Repeat recollection c) Both | 31 (17.81%) 34 (19.54%) 109 (62.64%) |
| | Integrated Learning Is | n(%) |
| | a) Useful b) Easy c) Useful & easy d) Useless e) Difficult f) Useless & difficult | 119 (68.39%) 3 (1.72%) 44 (25.28%) 4 (2.29%) 4 (2.29%) 0 (0%) |
| B | Peer Associated Learning Views | |
| | Usefulness of students seminar | n (%) |
| | a) Listener b) Presenter c) Both d) Not useful | 4 (2.29%) 37 (21.26%) 116 (66.66%) 17 (9.77%) |
| | Benefits for the Presenter | n (%) |
| | a) Improves the confidence b) Better analysis of the topic c) Both d) Not useful | 31 (17.81%) 33 (18.96%) 109 (62.64%) 1 (0.57%) |
| | Benefits for the Listener | n (%) |
| | a) Involved b) Relaxed c) Both d) Not useful | 55 (31.60%) 28 (16.09%) 76 (43.67%) 15 (8.62%) |

Table 5. Learning Methodology

174 medical undergraduates (studying in 5th and 7th semester) participated in the study, out of which 107 (61.49%) were male students and 67 (38.50%) were female students. They were all in the age group between 19 to 23 years.

General Questions

A set of six multiple choice questions assessed the attitude of the students regarding pharmacology. (Table 1) 65 (37.35%) students were aware of pharmacology as a subject before they entered 2nd MBBS, while 81 (46.55%) were somewhat aware of it and only 28 (16.09%) had no clue about it. Only 30 (17.24%) students in the present study, considered pharmacology as useful and boring, while majority 93 (53.44%) regarded pharmacology as useful, practically important and interesting subject. Maximum number of students 118 (67.81%) rated pharmacology as an average subject at par with other subjects, while 44 (25.28%) regarded it above all subjects. Maximum number of students 82 (47.12%) were of the notion that pharmacology should be taught after 2nd MBBS in the form of few lectures on recent advances. On the other hand, 14 (8.04%) students vehemently opposed the extension of pharmacology beyond 2nd professional. 98 (56.32%) students agreed with the view that one and half years is an adequate time for pharmacology. While 63 (36.20%) students wanted the study period of pharmacology to be reduced to one year and 11 (6.32%) wanted it to be increased to two years.

Teaching and Evaluation Methods

A set of six questions, assessed the attitude and perception of the students regarding teaching and evaluation methods used in pharmacology. (Table 2 and 3) Among the different

methods of teaching, 47 (27.01%) students preferred lectures with chalk blackboard, while 34 (19.54%) preferred clinical pharmacology, 27 (15.51%) preferred interactive class and 24 (13.79%) favoured audio-visual aided lectures. Majority of the students 56 (32.18%) wanted case studies to be incorporated as a part of regular teaching so as to make the subject more interesting and useful. While 36 (20.68%) students were in favour of problem based learning and 25 (14.36%) wanted quiz to be incorporated in regular teaching. (Table 2) Send up examination was favoured as the most useful evaluation method for preparation of the university professional examination by 61 (35.05%) students, followed by terminal examination, multiple choice questions, viva voce and tutorials by 39 (22.41%), 30 (17.24%), 26 (14.94%) and 18 (10.34%) students respectively. Majority of the students 127 (72.98%) were affirmative with the statement that assessment in pharmacology is fair, while 13 (7.47%) disagreed and 34 (19.54%) remained indecisive. Large number of students 123 (70.68%) agreed that the assessment process is transparent whereas 16 (9.19%) disagreed and 35 (20.11%) remained unsure. 101 (58.04%) participants agreed that the assessment concentrates on ability to acquire facts rather than on the development of problem solving skills, whereas 17 (9.77%) disagreed and 56 (32.18%) remained uncertain about it. Maximum number of students 154 (88.50%) vehemently agreed that multiple choice questions need to be included in the assessment, while only 6 (3.44%) disapproved and 14 (8.04%) remained inconclusive. (Table 3) Various suggestions were put forth by the students to make pharmacology more interesting which ranged from clinical case studies, problem-based studies, group discussions, quiz, multiple choice questions, regular tests and viva voce.

Learning Methodology

A set of six multiple choice questions, related to learning methods of students (Table 4 and 5). 36 (20.68%) students considered central nervous system as the most interesting topic, while 33 (18.96%) favoured autonomic nervous system, whereas 30 (17.24%) voted for cardiovascular system and 27 (15.51%) preferred endocrine pharmacology. Good number of students 53 (30.45%) placed clinical case sheets as the most interesting practical, while 33 (18.96%) favoured prescription writing, whereas 30 (17.24%) preferred experimental exercises (computer assisted learning) as their favourite practical. Only 10 students considered pharmacy exercises as their favourite. Good number of students 52 (29.88%) preferred to study from textbooks only, while 47 (27.01%) favoured reading from textbooks and notes. 113 (64.94%) students learnt pharmacology by understanding, grasping and cramming and only 8 students learnt pharmacology by cramming. (Table 4). Majority of the students 54 (31.03%) preferred to study 3 months before the exams, while 50 (28.73%) preferred 6 months duration for preparation of the exams. 31 (17.81%) students preferred to use mnemonics to memorise drug names, while 34 (19.54%) used repeat

recollection and 109 (62.64%) used both methods to memorise drug names. (Table 5). Significant number of students 116 (66.66%) considered that student seminar is useful for both the presenter and listener, while 37 (21.26%) were of the opinion that it is useful only for the presenter and 17 (9.77%) students disapproved of the usefulness of student seminar. Maximum students 109 (62.64%) felt that seminar improved the confidence of the presenter and provided better analysis of the topic. Among the benefits provided by student seminar to the listeners, 76 (43.67%) agreed that it made the listener both relaxed and involved and 15 (8.62%) believed that seminar provided no benefit to the listener.

DISCUSSION

The present study gives an insight into the attitude, perception and feedback of medical undergraduates on teaching, learning methodology and evaluation methods adopted in pharmacology in our Institution. A total of 174 students studying in 5th and 7th semester participated in this study. Large number of students 65 (37.35%) were aware of pharmacology as a subject, before they entered 2nd professional, while 81 (46.55%) were somewhat aware and only 28 (16.09%) had no clue about it. Our results are in alignment with various similar studies.^{4,8,10} On the contrary, majority of the students (72.08%) had no clue about pharmacology in another study.¹¹

Majority of the students 93 (53.44%) in our study considered pharmacology as a useful, practically important and interesting subject, whereas less number of students 30 (17.24%) regarded pharmacology as useful but boring. Similar results have been documented in other studies.^{3,4,8,10} Maximum number of students 118 (67.81%) considered pharmacology as an average subject at par with the other subjects, while 44 (25.28%) regarded pharmacology above all other subjects. Comparable results have been noted in various studies.^{3,4,8} In contrast, 49% students considered pharmacology above all the subjects and 32% considered it as an average subject at par with other subjects in another study.¹⁰

Majority of the students strongly supported the suggestion of pharmacology being taught after 2nd professional, amongst them, many of them 82 (47.12%) wanted few lectures on recent advances and only 36 (20.68%) preferred orientation course during internship. While small number of students 14 (8.04%) opposed this suggestion of pharmacology being taught after 2nd professional. The result of our study is in concurrence with another study.⁸ Whereas, in different studies, majority of the students wanted orientation course of pharmacology during internship.^{3,10} In relation to the time required for 2nd professional teaching, many of the students 98 (56.32%) preferred one and half years, while 63 (36.20%) favoured one year and 11 (6.32%) voted for 2 years. Similar results have been reported in other studies too.^{3,4,8,10}

Regarding the teaching methodology, a good number of students 47 (27.01%) favoured the tried and tested method of chalk blackboard teaching followed by clinical pharmacology and interactive class. Only a dismal number 24 (13.79%) of students, preferred audio visual aided teaching. The results of the present study are in accordance with a number of studies.^{3,11} In contrast, the preferred teaching methods varied in different studies. Audio visual aided lectures were preferred by most of the students in one study.⁸ While other studies showed that class lectures were least preferred by the students.^{4,10} In yet another study, no student liked exclusive blackboard teaching but maximum number of students preferred a combination of blackboard and audio visual aided lectures.¹²

In the present study, 56 (32.18%) students favoured case study to be included as part of regular teaching curriculum to make the subject more interesting followed by problem based learning and quiz. Comparable results are seen in various other studies, where maximum number of students vouched for inclusion of case studies and quiz.^{3,4,10} Send up examination was considered by majority of the students 61 (35.05%) as the most useful evaluation method in preparation for the university professional examination; followed by terminal examination, multiple choice questions, viva voce and tutorials. Our results are in alignment with similar studies.^{8,13} In contrast, in various other studies, the students expressed that the tutorials were most useful for preparation of university examination.^{3,4,10}

Regarding assessment, 127(72.98%) students unanimously agreed that the assessment system is fair while 34 (19.54%) remained indecisive. Whereas in another study, only 38% considered the assessment fair while 54.7% remained unsure about it.⁶ Significant number of students 123(70.68%) agreed that the assessment process is transparent while 35(20.11%) remained uncertain. Whereas, in another study conducted in Malaysia majority students remained neutral.⁶ Majority of the students 101 (58.04%) were affirmative with the statement, that assessment concentrates on ability to acquire facts rather on the development of problem-solving skills, while 56 (32.18%) remained inconclusive. Whereas, in another study maximum number of students remained neutral.⁶ Significant number of students 154 (88.50%) agreed to the statement that multiple choice questions need to be included in the assessment, while only 6 (3.44%) disagreed and 14 (8.04%) remained unsure. Our results are in concurrence with various other studies.^{6,12}

Students in the present study put forth various changes required to be made to make pharmacology more interesting, which ranged from giving more importance to clinical case studies, problem based studies, group discussions, quiz, regular tests. Similar suggestions have been forwarded by the students in various studies.^{3,4,14} In the present study, central nervous system was the most interesting topic amongst students 36 (20.68%), followed by autonomic nervous system, cardiovascular system and endocrine pharmacology. Whereas, other studies showed varied response. In one study central nervous system was

the most interesting topic,³ while in another study gastrointestinal system was the most interesting topic⁴ and in some studies cardiovascular system ranked the most interesting topic amongst students.^{8,10,11} Majority of the students 52 (29.88%) preferred to study from textbooks only, while 47 (27.01%) preferred to study from a combination of textbooks, teacher's class notes and self-prepared notes. Similar results have been reported in various other studies.^{3,4,8} In contrast, in other studies, students mostly preferred to study from a combination of notes and textbooks.^{10,11}

A combination of understanding, grasping and cramming approach was preferred by majority of the students 113 (64.94%) to learn pharmacology. Least number of students resorted to cramming alone to learn pharmacology. Analogous results have been seen in another study.¹⁰ While in number of other studies, majority of the students preferred to learn by only understanding the subject.^{3,8} Among the practicals, maximum number of students 53 (30.45%) regarded clinical case sheets as most interesting, followed by prescription writing, experimental exercises. Pharmacy exercises and dose calculations were least preferred. Other studies too showed similar trends, where prescription writing was the most favourite practical amongst students.^{3,10,11}

Significant number of students 54 (31.03%) preferred to study 3 months before the exams, while 50 (28.73%) were comfortable with 6 months of preparation for the exams. In contrast to our study, maximum number of students (51.5%) preferred to study 6 months before the exams in another study.⁹ Maximum number of students 109 (62.04%) used both mnemonics and repeat recollection to memorise drug names. While maximum number of students in another study only used mnemonics to learn the names of drugs.⁹ Majority of the students, 116 (66.66%) considered student seminars as beneficial for both presenter and listener. In contrast, in another study, 55.7% considered it to be beneficial for the listeners only,⁹ while in another study, students were against student seminars.¹³ Positive attitude of our students towards pharmacology is reflected in the present study. As students had a fair knowledge about pharmacology as a subject before they entered 2nd professional and majority of them considered pharmacology useful, important and interesting. Many of them were in favour of pharmacology being taught after 2nd professional.

The attitude, perception and feedback of our students regarding teaching methods employed in pharmacology is positive. As majority of the students preferred the old tried and tested chalk blackboard teaching with many of them also favoured clinical pharmacology and interactive classes too. Keeping pace with the changing times, majority of the students in our study, wanted case studies to be added in regular teaching curriculum which would in turn enable them to have a better understanding of the subject.

Positive attitude of the students was also evident towards the evaluation methods employed in pharmacology as many of them unanimously agreed that the assessment was fair and transparent. Our students were forthcoming in

giving suggestions to make the subject more interesting which ranged from laying more stress on clinical case studies, problem based learning and regular exams. All these indicate the eagerness of our students to learn pharmacology more effectively. Students showed right attitude towards learning too. As majority of the students preferred clinical case sheets and prescription writing over the mundane pharmacy exercises. Majority of them used a combination of textbooks and notes to learn pharmacology and studied regularly to gain more knowledge by understanding and grasping the topic and started preparation of the exams 3 months before their commencement.

CONCLUSIONS

The overall view of the students has been positive towards teaching learning methodology and evaluation methods adopted in pharmacology in our institution. The present study has provided valuable inputs which has helped us to feel the pulse of our students and made us aware of their needs and expectations, which in turn would help in planning the curriculum and improvisation of teaching and evaluation methods employed in our institution.

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