Original Article

Knowledge: Understanding Attitudes and Practices Regarding Osteoporosis Among Postmenopausal Women in Islamabad – A Cross-Sectional Survey

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Abstract

Objectives: To determine the knowledge of post-menopausal women regarding risk factors and prevention of osteoporosis, and to assess their attitude and practices towards osteoporosis.

Methodology: A descriptive cross-sectional survey was conducted through an online self-administrated questionnaire comprising of 35 questions on a sample size of 101 post-menopausal women. Simple random sampling was used. The questionnaire was based on Osteoporosis Health Belief Scale. It included four sections, dedicated to demographic information, knowledge, attitude and practices, respectively. The questionnaire was also translated into Urdu for the ease of the study participants. The research spanned from 12th February 2022 – 15th October 2022. Data was analyzed using SPSS version 23.

Results: Out of 101 participants, majority of the women had done matriculation or were college graduates. Most of the women were between 51-70 years of age. 76% women had adequate knowledge regarding the risk factors and prevention of osteoporosis but only 48% of them were practicing preventive activities. Weight bearing exercises and hormone replacement therapy were the most poorly identified preventive measures. It was observed that older women (51-56 years and above) were more devoted in their practices as compared to younger participants (40-50years).

Conclusion: The women who participated in this study had satisfactory knowledge, but their preventive practices were lacking.

Key words: Post-menopausal women, osteoporosis, knowledge, attitude, practices

Keywords: Pregnancy, anemia, Gutka, Mawa, addiction, parity.

Cite this article as: Jamil A, Aftab A, Fatima N, Mustehsan ZH, Kaleem M, Arshad A, Zeeshan M, Niazi AK. Knowledge: Understanding Attitudes and Practices Regarding Osteoporosis Among Postmenopausal Women in Islamabad – A Cross-Sectional Survey. J Soc Obstet Gynaecol Pak. 2023; 13(3):396-403.

Introduction

Osteoporosis is a major health concern around the world. It is a systemic disease characterized by low bone mass and micro architectural deterioration of bone tissue, resulting in bone fragility and increased risk of bone fractures. The loss of bone mass occurs when the rate of bone resorption is greater than that of bone formation. The disease can affect both genders but females are at a higher risk of developing the disease. High incidence rate of osteoporosis in women is mainly caused by women having lesser bone mass, pregnancy consuming a large amount of calcium and other nutrients, and most importantly the cessation of estrogen secretion by ovaries after menopause.[1] Estrogen regulates bone remodeling by modulating the production of cytokines and growth factors from bone marrow and bone cells. With ovarian aging, the follicle pool gradually declines and the oocyte quality reduces, accompanied with decline in serum estrogen. Hence, estrogen deficiency plays and important role in pathogenesis of osteoporosis in postmenopausal women.[2]

Osteoporosis is broadly classified as Primary osteoporosis (Type I and Type II) and Secondary osteoporosis. Type I primary osteoporosis is a direct consequence of decrease in estrogen after menopause. It is also called post-menopausal osteoporosis or senile osteoporosis and is the most common type of

Authorship Contribution: [1,2,3,5,6,7]Substantial contributions to the conception or design of the work, acquisition, [4]Final approval of the study to be published or interpretation of data for the work, design.

Funding Source: none
Conflict of Interest: none

Received: May 04, 2023
Accepted: Sept 02, 2023

osteoporosis. Type II is associated with normal aging. It manifests after 70 years of age; females are affected twice as frequently as men. Secondary osteoporosis is considered a decrease in bone mass density either due to some disease (leukemia, hyperthyroidism, hyperparathyroidism) or intake of some drugs (such as glucocorticoids, thyroid hormones or anti-convulsants).[3]

Several risk factors for osteoporosis have been identified. These include non-modifiable risk factors - Caucasian or Asian ethnicity, female gender, positive family history, low body mass index, early menopause. The modifiable factors include - Low calcium intake, reduced Vitamin D levels in body, smoking, excessive intake of caffeine and carbonated drinks, alcohol abuse, low physical activity or prolonged use of drugs such as glucocorticoids, aluminum antacids and anti-coagulants. [4]

Osteoporosis not only gives rise to morbidity, but also markedly diminishes the quality of life of women after menopause. Elderly women suffer from different osteoporotic fractures such as those of hip, spine, forearm and proximal humerus. The majority of the affected women endure pain, disabilities, reduced social interaction, and depression, which may lead to an expensive lengthy hospital stay and premature death. [5]

Young and premenopausal Pakistani women diagnosed with osteopenia also have likelihood to develop osteoporosis. The prevalence of osteoporosis has now increased to endemic proportions posing a major public health problem globally. Approximately 200 million women are distressed from this disorder worldwide. It is projected that more than about 50% of all osteoporotic hip fractures will occur in Asia by the year 2050. [6, 7]

The overall prevalence of osteoporosis in the Eastern Mediterranean Region was found to be 24.4%.[8, 9] In Pakistan, the prevalence of osteoporosis among post-menopausal women is around 6.7% (9, 10). According to the survey conducted recently by International Osteoporosis Foundation, hip fractures in Pakistan costs 1200-2400 USD per hip fracture indicating a great burden of disease on poor population of Pakistan. [10, 11]

A study was conducted in Iran to find out the knowledge, attitudes and prevention practices of Iranian women regarding osteoporosis. It included 770 households and the data was collected over a period of five months from April to August 2005. It was found that only 3.8% of the women did osteo-protective exercises and only 5.5% were taking calcium supplements. A significant relationship was found between preventative practices and knowledge. It was concluded that Iranian women had insufficient knowledge about post-menopausal osteoporosis. They had a negative attitude towards prevention and practices regarding prevention were insufficient. [12]

A study was done in Riyadh, Saudi Arabia to study women's knowledge, attitudes and practices about osteoporosis prevention from 2009 to 2011. Both working women and housewives were included in the study and were chosen by simple random sampling. It was concluded that majority of the women in both groups, working and housewives had sufficient knowledge and good attitudes scores regarding osteoporosis. However, both groups failed to follow prevention measures. [13]

A study was done in Saudi Arabia about knowledge of osteoporosis in middle-aged and elderly women. It included 368 women who attended a primary health clinic. A structured questionnaire was given to the women to assess their knowledge. The study was done from January through July, 2006. 76% of the participants were post-menopausal. Out of 368, 62% women had heard about osteoporosis with younger women making a significant portion of this group. When asked about risk factors, a significant proportion of the women identified reduced calcium intake as the cause. Less than half the women included were able to identify a calcium rich diet as a preventative measure. The study concluded that a significant number of Saudi women lacked information about prevention and risk factors of osteoporosis. [14]

A study was done on Malaysia to assess the knowledge and attitudes of maintaining bone health among post-menopausal women. It included 116 post-menopausal women with the youngest aged 49 and the eldest aged 82 years old. It found a significant association between age of participants, the level of education and knowledge of osteoporosis. No significant difference was found when participants' attitudes towards maintaining bone health were analysed.[15]

A study was carried out among 232 respondents in Kuala Lumpur. Five districts in Kuala Lumpur were identified, and convenient sampling was used for recruitment of apparently healthy subjects from community and institutional settings. The findings indicated a moderate level of knowledge and attitude towards osteoporosis. Osteoporosis knowledge varied significantly with educational level and household income. Furthermore, attitudes were different in relation to educational level and household income. Based on

the multiple tests, relatives and friends appeared to be the most significant influencing attitude. [15]

This study is questionnaire-based survey conducted on one hundred postmenopausal women in multisite (King Fahad Hospital, PCCSH and community population) in AlHasa Saudi Arabia between 1 December 2015 to 1 March 2015 to evaluate their awareness about the disease, risk factors and possible treatment that provide the basis for health plans to control the disease. Patients had a moderate awareness with 70% about possible treatment and nutritional factors but low awareness with 30% about the risk factors that induced Osteoporosis. Study found that the patients' awareness about osteoporosis is moderate due to deficiency in patient counseling program and low availability of medical information sources. [16]

Another study on awareness regarding osteoporosis was conducted among 50 post-menopausal women who volunteered in Chennai, Tamil Nadu, and India from 2016-2021. It was indicated from the study that the awareness of osteoporosis among post-menopausal women is very low. About 67% of them never heard of osteoporosis before and 33% of the population had already heard of osteoporosis. Hence, there is an immediate need to create awareness of osteoporosis among women. [17]

A cross-sectional survey of 99 English-speaking women aged ≥ 65 years at two Sing Health polyclinics Singapore was conducted to assess their knowledge about osteoporosis prevention and awareness and perceived barriers to osteoporosis screening. The majority of the participants (54.5%) had low knowledge of osteoporosis, and only 12.1% had high knowledge scores. The top reasons for declining BMD testing were poor awareness and knowledge of the disease, and the cost of BMD. [18]

In a study conducted at Aga khan university Karachi, an osteoporosis knowledge assessment questionnaire was used to collect data and it was delivered through a face-to-face interview. The knowledge on osteoporosis in younger women was very poor compared to relatively older females. However, women belonging to higher socioeconomic status and better education had slightly more knowledge about osteoporosis compared to those with a low education level, regardless of age. [19]

Another cross-sectional study was conducted in Dow University Karachi from Jan till June 2015 by adopting a pre validated questionnaire distributed to women between the age of 18 to 55 years, who had agreed and given consent to participate in the study. Findings revealed that majority of the participated women knew about osteoporosis and considered it to be a serious disease. In spite of having knowledge the respondents are not practicing appropriate lifestyle and dietary habits to decrease their risk of osteoporosis. Such behaviors include inadequate physical activity, inadequate calcium and vitamin D intake. The current study identifies that there is a need of standardized approach coupled with the well-structured health education programs to promote healthy behaviors, identify women at-risk, and encourage early diagnosis and treatment. [19]

A study was undertaken with 162 female students of University of Baluchistan, Quetta. Knowledge was assessed by using a pre-validated self-administered questionnaire containing 20 disease related questions. Convenience sampling technique was used for data collection. The study concluded that females had better understanding of the disease, osteoporosis, but they need to know about the treatment for this disease in Pakistan and it is also necessary for them to know more about some specific risk factors.[11]

Osteoporosis continues to be under recognized in many parts of Pakistan. The majority of osteoporotic fractures occur in postmenopausal women. Therefore, it is important to assess their knowledge regarding osteoporosis and identify their attitudes and practices in order to prevent fractures among this most susceptible group.

The aim of the present study was to assess the awareness regarding osteoporosis among post-menopausal women in Islamabad by determining their knowledge regarding osteoporosis and by understanding their attitude and practices towards its prevention.

Methodology

The Study Design was "Descriptive cross-sectional" and was carried out in Islamabad Capital Territory from 12th February 2022 to 15th October 2022. A sample of 101 post-menopausal women was calculated with a confidence interval of 95% and margin of error ±10% using an online sample size calculator. Simple random sampling was done for recruitment of post-menopausal women from the community.

Inclusion Criteria: Women who did not have menstrual bleeding for a year in absence of any disease or pregnancy, women who had access to internet, and women who are well conversant in Urdu/English.

Exclusion Criteria: Women having premature menopause due to some underlying pathology.

Data Collection Procedure: Data was collected by circulating online, well-structured, self-administered questionnaires comprising of 35 questions to postmenopausal women living in Islamabad. The questionnaire was based on Osteoporosis Health Belief Scale. It was specifically designed to assess beliefs related to behaviors and practices regarding osteoporosis among our study participants.

The questionnaire included demographic information and comprised of three sections:

1. Knowledge of osteoporosis in post-menopausal women
2. Attitude regarding the risk of osteoporosis in post-menopausal women
3. Practices related to prevention of osteoporosis in post-menopausal women.

Twenty items used a 5-point Likert scales ranging from strongly disagree to strongly agree. Twelve questions were answered in yes or no and there were three multiple choice questions.

The questionnaire was in English and it was also translated into Urdu for the ease of the study participants.

Data Analysis: SPSS software version 23 was used to enter data and calculate the results. The data were analyzed by using descriptive statistics through calculating frequencies and percentages. Chi-square value was calculated for the variables where the P value less than 0.05 were considered to be significant. Correlations were used between different variables (knowledge and attitude) to accomplish the intended aims. To interpret results, tables and graphs were made.

Results

Table I shows that out of 101 post-menopausal women who participated, 43.6% women were 56 years and above. 45.1% of the women had a height of 5ft 2 inches or less while another 45.1% of them had a height range between 5ft 3 inches - 5 feet 8 inches. Thirty-nine (38.2%) participants reported their weight to be 56-70kgs, while thirty-five (34.7%) other participants reported their weight to be between 71-80kgs.

With respect to education, majority of the women (46.1%) had done matriculation, 11.8% received no formal education, 29.4% had done intermediate and another 11.8% were post graduates. Most of the participants (80%) were unemployed while other (20%) were working.

Table I: Socio-demographic variables.

Characteristics		n	%
Age	40 - 45 years	6	5.9
	46 - 50 years	17	16.8
	51 – 55 years	34	33.7
	56 years or above	44	43.6
Height	5 feet 2 inches and less	46	45.1
	5 feet 3 inches - 5 feet 8 inches	46	45.1
	5 feet 9 inches and above	9	8.8
Weight	45 - 55 kg	6	5.9
	56 – 70 kg	39	38.2
	71 – 80 kg	35	34.7
	81 kg and above	21	20.8
Level of education	No formal education	12	11.8
	Up to matric	47	46.1
	Intermediate/Graduate	30	29.4
	Post-graduate	12	11.8
Employment	No	81	79.4
	Yes	20	19.6
Last date of period	1 – 4 years ago	31	30.4
	5 – 9 years ago	27	26.5
	10 years ago, or more	43	42.2

42.2% women reported that they had cessation of menstruation 10 years ago, while remaining 30.4% and 26.5% of the participants reported they had their last period 1-4 years and 5-9 years ago, respectively.

Table II: Basic Knowledge regarding Osteoporosis.

Questionnaire Items	SA	A	N	D	SD	Positive answers (n)	(%)
Have you heard about osteoporosis?						Yes=72	71.3
What is osteoporosis?						Bone=81	80.2
Osteoporosis increases the risk of bone fracture?	55	25	12	8	1	80	79.21
Osteoporosis is more common in women than men?	62	27	7	2	3	89	88.12
Which according to you is the most Calcium rich food?						Milk=65	64.4

Table II shows that 72 (71.3%) participants had heard about osteoporosis. Out of 101 women, 81(80.2%) correctly identified osteoporosis to be the disease of bone. About 80% women agreed that osteoporosis increases the risk of bone fracture while 88.1% of all the participants believed osteoporosis to be more common in women than men. 65 (64.4%) women identified milk to be the most calcium rich source.

Table III indicates that 62.3% women thought being Asian makes them more susceptible to developing osteoporosis. Smoking, obesity and family

predisposition were considered a risk factor for osteoporosis by 57.43%, 80.2% and 56.4% women, respectively.

Table V and VI show that 80.1% of women believed that they needed to take calcium supplements in addition to dietary calcium to prevent osteoporosis. Out of 101

Table III: Knowledge regarding risk factor for osteoporosis.

Questionnaire Item	SA	A	N	D	SD	Positive answer (n)	%
Being Asian makes you more susceptible to Osteoporosis?	37	26	27	11	0	63	62.38
Family history of Osteoporosis strongly predisposes a person to osteoporosis?	28	29	26	17	1	57	56.44
Smoking may be a risk factor for Osteoporosis?	29	29	23	12	8	58	57.43
Menopause is a risk factor for Osteoporosis?	44	37	12	6	2	81	80.20
Lack of exercise maybe a risk factor for Osteoporosis?	29	44	14	11	3	73	72.28
If you are Obese, you are more likely to develop Osteoporosis?	51	30	12	7	1	81	80.20

Table IV: Knowledge regarding prevention of osteoporosis.

Knowledge regarding prevention	SA	A	N	D	SD	Positive answer (n)	%
Do you think taking in enough Calcium prevents Osteoporosis?	44	37	13	4	3	81	80.20
Weight bearing exercises help prevent Osteoporosis?	20	26	29	17	9	46	45.54
Vitamin D helps in the prevention of Osteoporosis?	40	41	14	4	2	81	80.20
Female hormone (estrogen) may be used in the prevention of Osteoporosis?	25	27	37	11	1	52	51.49

Table V: Attitude regarding osteoporosis.

Questionnaire Item	SA	A	N	D	SD	Positive answers (n)	(%)
Do you think you need to take calcium supplements in addition to dietary calcium to prevent osteoporosis?	44	37	13	4	3	81	80.19
Do you think it is important to get your Vitamin D levels checked?	48	31	14	4	4	79	78.22
Would you be interested in discussing osteoporosis with your physician?						Yes=80	79.2
Would you use hormone replacement therapy as prevention of osteoporosis?						Yes=38	37.62

Table VI: Practices regarding osteoporosis.

Questionnaire Item	Yes	No	Positive answers (n)	(%)
Do you practice weight bearing exercises? (Climbing stairs, lifting weights, hiking)	50	51	50	49.5
Do you take Vitamin D supplements?	62	39	62	61.4
Do you take Calcium supplements?	64	37	64	63.4
Have you ever talked to your physician about osteoporosis?	48	53	48	47.5

Table VII: Correlations between Knowledge and Attitude.

		mean knowledge likert	mean attitude likert
mean knowledge likert	Pearson Correlation	1	.436**
	Sig. (2-tailed)		.000
	N	101	101
mean attitude likert	Pearson Correlation	.436**	1
	Sig. (2-tailed)	.000	
	N	101	101

80.2% women acknowledged menopause to be the risk factor for osteoporosis and 72.2% women associated lack of exercise with osteoporosis.

Table IV shows that Majority of the women (80.1%) thought that taking enough calcium will protect them from osteoporosis. Only 45.5% recognized that weight bearing exercise as prevention. Most of the women (81, 80.1%) believed Vitamin D supplements will prevent osteoporosis. 51% of the post-menopausal women agreed to use hormone replacement therapy.

participants,79 (78.2%) agreed that they should get their Vitamin D levels checked regularly. 79.2% of the women were interested in discussing osteoporosis with their physicians. Only 37.6% said they wanted to use hormone replacement therapy to prevent osteoporosis. 49.5% of the women practiced weight bearing exercises. Majority of the participants (61.4%) were taking Vitamin D supplements and 63.4% were taking calcium

Table VIII: Chi Square Results Regarding Knowledge and Practices.

Questions regarding knowledge	Questions regarding practices	Relation through chi-square	If results are significant
Weight bearing exercises help prevent osteoporosis	Do you practice weight bearing exercises?	.357	Insignificant
Do you think taking enough calcium prevents Osteoporosis?	Do you take calcium supplements?	.001	Significant
Vitamin D helps in prevention of Osteoporosis?	Do you take vitamin D Supplements?	.025	Significant

supplements. 48 women (47.5%) had talked to their physician about osteoporosis.

A comparison between the ratio of correct knowledge about osteoporosis was carried out among females by dividing them into 4 different groups according to their level of education i.e., no formal education (12 participants), education up to matric (47 participants), intermediate/undergraduates (30 participants) and postgraduates (12 participants). The percentage of females who had the correct knowledge about osteoporosis from each of the groups was calculated by the following method: number of females from a group who had the correct answers to a question ÷ total number of females from that group in the study × 100

According to the results the postgraduates had significantly a higher number of correct answers as compared to the other participants in almost all the different questions.

The percentage of females who mentioned adherence to the preventive practices from each group was calculated by the following method: number of females from one group who followed the particular preventive measure ÷ total number of females from that group in the study ×100

From a total of 81 unemployed and 20 employed female participants in the study, the results calculated showed that the women who were currently employed had been more active in practicing the preventive measures regarding osteoporosis. Correlation is significant at the 0.01 level (2-tailed).

Knowledge and attitude are depending upon each other 43.6%. This also means that if we change one variable, there are 43.6% chances that other variable will also be changed.

Discussion

Osteoporosis is a serious health problem. It causes reduction in the bone mass and increases the porosity of bones making them more prone to fractures.[20] The national osteoporosis foundation describes osteoporosis as a 'silent disease' that affects both the genders, but is more common in women, particularly of post-menopausal age (45-55years) following the cessation in estrogen secretion. [21] It is important due to its morbidity, mortality, adverse effects on the quality of life and extra costs imposed to the patient and society, for these reasons women need to be more educated regarding osteoporosis especially before menopause. Hence increasing knowledge of osteoporosis should be a priority for future intervention programs in order to promote specific behavioral strategies for osteoporosis prevention.

The purpose of our study was to determine the knowledge and asses the attitude and practices of post-menopausal women towards osteoporosis. Different variables were put into consideration i.e., knowledge regarding risk factors and preventive measure, their attitude towards management of the disease and use of hormone replacement therapy, practices such as exercise, calcium intake, vitamin D intake and counseling with their physician.

In the present study, around eighty percent of study population correctly identified osteoporosis as the disease of bone, which was higher than the study in Saudi Arabia (48.19%).[13] Moreover, majority of the women (79%) believed that osteoporosis increases the risk of bone fracture which was consistent with the findings of a study carried out by done in Turkey. [22]

It was observed that postmenopausal women showed good knowledge regarding the risk factors, menopause (80.2%), and lack of exercise (72%) which was similar to the findings of a study conducted in Saudi Arabia in 2016. [13] In the present study, more than fifty percent of the participants had good knowledge regarding contribution of cigarette smoking to osteoporosis and were aware that the chances of developing osteoporosis were higher in the presence of a positive family history, whereas, the results of a study conducted by jayashree

et al in Southern India showed a lesser percentage of women who knew the association between osteoporosis, smoking and family history.

In this study knowledge about osteoporosis increased with increasing age in particular the 51-56 year old participants, similar results were found in another study in New Zealand that 40-49 year old participant's demonstrated greater knowledge about osteoporosis. It is likely that older women become more aware of the implications of hormonal change as they approach menopause. [23]

The findings in the present study suggested moderate level of attitude of the participants regarding osteoporosis. This was slightly different from a study in UAE where majority of the participants had a satisfactory level of knowledge and attitude towards osteoporosis.[9] In the present study, around eighty percent of the women were interested in discussing osteoporosis with their physician which were similar to the results of a study conducted in Turkey. [24]

More than half of study population identified the fact that hormone replacement therapy could help in prevention of osteoporosis. With regards to HRT participants had poor knowledge similar to the findings in other countries. In Egypt, more than ninety percent 91% of study participants did not know about HRT.[25] The participants in a study conducted in the UAE demonstrated insufficient understanding of menopause and HRT, according to the findings.[26] In our study, women's attitude towards HRT was mainly negative as only 38% women would use HRT as a preventive measure.

In a study conducted in Malaysia, it was observed that there was low level of preventive practices among their participants, which was similar in the present study as well([27]). Less than forty percent of women in the present study exercised regularly and around fifty percent believed that weight bearing exercises helped prevent osteoporosis; this was in contrast with the study conducted in Riyadh because their participants knew the tremendous benefit of exercise [28]

The discussion regarding osteoporosis with a physician was not carried out by almost half of our study participants which was similar to a study in Turkey in which 56% of the postmenopausal women had never discussed osteoporosis with a physician. [29] Almost half of our study population had their Vitamin D levels checked. In a study conducted in Saudi Arabia, more than three quarter of participants (89.63%) measured their vitamin D level. [30]

Calcium and vitamin D together help build stronger bones in women after menopause. In this study, majority of the women took calcium and vitamin D supplements, whereas in France, it was reported that only 38% of the participants were talking calcium and only 30% were taking vitamin D supplements.[31]

Conclusion

In this study more than seventy percent of women who participated had satisfactory knowledge regarding risk factors. However, the preventive measures like taking calcium and vitamin D supplements were ignored by youngest age group whereas practicing weight bearing exercises was disregarded by the oldest age group in the study. Overall, almost fifty percent of the total women were practicing at least one of the preventive measures for osteoporosis. This shows that the women who participated had significant knowledge, but their preventive practices were lacking.

Limitations: The area of study was limited to Islamabad, the method of data collection was online therefore only those women were able to respond who had electronic gadgets. The number of women included in the study was only 101, as the hard copies of the questionnaires were not distributed in person. The study results could have been significantly improved if a larger sample size was used which would have also covered the women living in the remote areas of Pakistan.

Recommendations: A thorough understanding and awareness of the disease is necessary for the success of preventive measures, changes in lifestyles, and adherence to the treatment. Therefore, to reduce osteoporosis we must educate women about the key risk factors related to osteoporosis and the importance of practicing preventive measures early on for better health. We must also motivate them t take calcium and vitamin D supplements on a regular basis, practice weight bearing exercises regularly and have routine follow ups with their physicians for early diagnosis and treatment.

Health authorities must play their part in this regard to organize campaigns particularly at primary health care levels. The Ministry of Education should also be involved in this matter to give health education on this highly prevalent disease of post-menopausal women by adding significant and accurate information into the curricula of students at college level.

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