ISSN 2394–806X (Print), ISSN 2454-5139 (Electronic)
IJHRMLP, Vol: 05 No: 02, July, 2019
Printed in India

ORIGINAL PAPER

Medical students' knowledge about research methodology and impact of research workshops

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Received on January 22, 2019; editorial approval (Revised) on March 03, 2019

ABSTRACT

Introduction: *It is an open fact that a research is very crucial for development of society. Despite various studies on the benefits of research, there is no fresh study about students' familiarity with principles of research methodology and impact of research workshops in the medical education of India.* ***Objectives****: In this study, we have aimed to assess undergraduate medical students' knowledge in principles of research methodology and impact of research workshops and about the factors affecting it.* ***Materials*** *and* ***methods****: In this cross-sectional study, we have investigated* ***100*** *randomly selected students who were in their basic science stage of medical studies at Assam Medical College, Dibrugarh in the year 2019. To determine knowledge about principles of research, participants filled a validated and reliable pre-texted questionnaire. The distinctive responses of the students, i.e., their answers to the questions on research principles were collected and analyzed. Linear regression models were applied to predict the score of knowledge of the participants.* ***Results:*** *Significant improvement was observed in 82.50% in the mean knowledge score after the workshop and the findings are found to be sensitives (p-value .002). However, attitude score after the workshop remains same (63.75%) even after the workshop.* ***Conclusion****: Despite limitations of this study, our findings has highlighted low to moderate level of knowledge of undergraduate medical students in principles of research methodology and the important impact of research workshops. These findings can be utilized for future health research planning to improve the situation in the field of medical education, etc.*

Keywords*: Medical education; research impact; ethical issues.*

INTRODUCTION

Health research training on research methodology is an important part of medical education.[1] In recent past, the apprehension about the research activities among medical students, faculties and researchers working in various medical institutions has increased in South Asia.[1-3] The reasons of this apprehension are multi-factorial including mandatory research publications for professional promotions, elective research assignments and projects given to the students and as part of academic exercises among medicos for presenting papers in conferences and Continuing Medical Education (CME). The aims were moulding of medical curriculum to integrate capacity building for research and holding of workshops on different aspects of conducting research.[2,3]

In view of the present context, it is important to determine the efficacy of each intervention of learning in enhancing the interest and skills of students in health research and to identify those areas necessitating development to meet up the new challenges.

With this backdrop, this study was conducted among medical students to determine the impact of a workshop on research methodology, as a short-term intervention, on their knowledge and attitudes about health research before and after attending a training session on research proficiencies, conducted in the college.

MATERIALS AND METHODS

In this cross-sectional study, 100 randomly selected students

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Cite this article as: *Deka SJ, Moondra AK, Mahanta Putul. Medical students' knowledge about research methodology and impact of research workshops. Int J Health Res Medico Leg Prae 2019 July;5(2):32-34. DOI 10.31741/ijhrmlp.v5.2.2019.7*

who were in their basic science stage of medical studies at Assam Medical College, Dibrugarh, Assam in the year 2019 were selected. A validated and pre-texted questionnaire was used to determine knowledge about principles of research. Linear regression models were applied to predict the score of knowledge of the participants. Prior to collection of the data human institutional ethical clearance was taken which include inform consent of the participant.

Before collecting data, a sample workshop was organized for the student of basic science level. The workshop consisted of a lecture, demonstration and interaction of the students that has covered project identification, epidemiological study designs, experimental study designs, science and scientific methods, research ethics, designing questionnaires, research statistics, an introduction to statistical methods. Scientific information, literature search and manuscript preparation were also briefed.

The knowledge and attitudes were assessed using a standard validated questionnaire developed by Vodopivec et al.[4] The data were collected were analyzed using Microsoft Excel.

RESULTS

In this study, we have assessed undergraduate medical students' knowledge in principles of research methodology and about the factors affecting it. A total of 100 medical students were participated in this research out of 120 students we approached for.

Table I shows the knowledge and attitudes of the students. Significant improvement was observed in the mean knowledge score after the workshop, i.e., 82.50% and the findings are found to be sensitives (p-value .002). However, attitude score after the workshop (63.75%) remains same even after the workshop.

Table 1 Impact of a workshop on the knowledge and attitudes of UG medical students in principles of research methodology

Traits	Pre-workshop in %	Post-workshop in %	p-value
Knowledge	67.50 + 20.5	82.50 + 18.8	.002
Attitude	63.75 + 14.1	63.75 + 13.6	NS

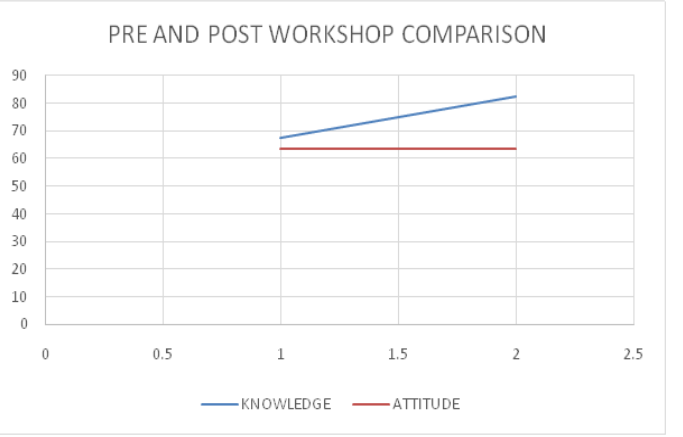

Table 2 summarizes knowledge of the participants in different aspects of research methodology. We observed a good improvement of knowledge of the students after the workshop as shown in **Figure 2**.

Table 2 Principles of research knowledge score in participants

	Pre-workshop in %		Post-workshop in %		Total
	Yes	No	Yes	No	
Research topic	11	89	40	60	100
Protocol writing	10	90	35	65	100
Primary research	5	95	60	40	100
Secondary research	20	80	70	30	100
Structure of an original article	5	95	90	10	100
Ethical consideration	4	96	95	5	100

DISCUSSION

The experiences of health research and publication as a medical student has been well demonstrated to be associated with postgraduate research involvement[5] and even among the faculties working in the different medical universities of India as present-day scenario. The present study has also highlighted the increased level of knowledge after attending the workshop.

This study shows medical students have low-to-moderate knowledge about principles of research methodology which is supported by a study carried out by Windish et al. on understandings of medical residents of biostatistics and interpretation of results, mean correct answer was 41.4%, indicating low-to-moderate knowledge of the medical students in these issues.[6] Similar findings were observed among physicians practicing in an academic medical center,[7] medical students, first year Croatian medical students,[8] Pakistani medical students,[9] and medical students in South East Europe.[10]

The result showed participation in research methodology

workshop independently has improved variance of students' knowledge about principles of research methodology in selection of research topic (40%), protocol writing (35%), concept of primary research (60%), secondary research (70%), structure of an original article (90%) and about the concept of various ethical considerations. This shows the most important factor in students' knowledge on principles of research methodology is attendance in research methodology workshops. In concordance with this finding, Windish et al. found that prior biostatistics training as well as additional advanced degrees contributes to higher mark in understanding biostatistics and interpretation of results.[6] Similarly, Polychronopoulou et al. have shown that prior relevant education in biostatistics is an important predictor of knowledge of biostatistics among European orthodontic postgraduate students.[11]

Considering the fact that some units of medical curriculum are related to health and epidemiology basics, it was assumed that passing these courses would enormously improves students' knowledge on principles of research methodology[12] but our findings suggest that medical course is exclusively important in topics of understanding p-value and secondary studies. However, bewildering factors such as attendance of the students in such workshop or personal interest of students in such interventions may also contribute to the knowledge of students' in principles of research methodology.

A positive attitude of the medical students was not observed in this study even after the workshop regarding their knowledge about research methodology and impact of research workshops. These findings specify that an intensive course may be help to develop the understanding of research methodology and techniques.

Limitation of the study: As the sample size is small to draw a definite conclusion. Therefore, a large-scale study is needed to be conducted to confirm these findings.

CONCLUSION

Brief interventions like workshops, CMEs aimed to enhance the interest and skills of medical students in health research and publications are very much needed as this study has shown a significant improvement on the knowledge regarding principles of health research methodology. However, to improve the attitudes of medical students in principles of research methodology repetitive intervention is required.

The results of this research deliver a useful evidence for policy makers in educating medical students in terms of research and publications.

Conflict of interest: None declared.

Ethical clearance: Taken.

Source of funding: None declared.

Author Disclosure: (1) The article is original with the author(s) and does not infringe any copyright or violate any other right of any third party. (2) The article has not been published (whole or in part) elsewhere, and is not being considered for publication elsewhere in any form, except as provided herein. (3) All author(s) have contributed sufficiently in the article to take public responsibility for it and (4) all author(s) have reviewed the final version of the above manuscript and approved it for publication.

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ISSN 2394–806X (Print), ISSN 2454-5139 (Electronic)
IJHRMLP, Vol: 05 No: 02, July, 2019
Printed in India

ORIGINAL RESEARCH PAPER

Ethnic variation of uric acid level among population in greater Kamrup district

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Received on Dec 21, 2017; editorial approval (revised) on April 11, 2019

ABSTRACT

Introduction: *In about 16th century gout sounded like a disease out of a novel. Purine leads to high level of uric acid which are deposited in the joints and causing the attack of gout. Gout which is the disease since antiquity is an acute, often recurrent arthritis mediated by the crystallization. Genetic or other influences are important modulator for the serum uric acid level. Many studies have been conducted worldwide to identify the risk factors for hyper uricemia including ethnic, enzymatic and environmental predisposition.* ***Materials and methods:*** *The present study was conducted among different communities in Greater Kamrup District. Samples were collected by stratified random sampling technique. Communities selected were Ahom; Adivasi; Bodo, Bengali, Karbi, Manipuri and Marwari. Serum uric acid level in different communities were evaluated and compared.* ***Results:*** *Uric acid level of Boro community is higher in comparisons to other communities. Uric acid level of Ahom community is found higher in comparison to Manipuri, Bengali, Adivasi and Marwari. Sex wise uric acid level is high in case of males 5.69 mg/dl, compared to females 4.95mg/d1.* ***Conclusion:*** *From the present study, it can be concluded that different communities of Greater Kamrup district depicts different uric acid levels and association with sex. This finding can be associated with dietary habits of different communities. It can be placed in the context of overall health promotion, disease prevention and disease treatment with appropriate attention to nutritional needs in different communities.*

Keywords: *Gout; uric acid; community; purine.*

INTRODUCTION

In about sixteenth century gout sounded like a disease out of a novel.[1] That is probably because this joint disease famously afflicted many luminaries from the past. It has been theorized these historical figures had gout because they had money to enjoy red meat, sea food and all other food rich in purine.[2] Purine leads to high level of uric which are deposited in the joints and causing the attack of gout. Gout which is the disease since antiquity is an acute, often recurrent arthritis mediated by the crystallization.[3]

Some indigenous people such as Polynesians of Pukapuka in the Cook Island have relatively high serum uric acid level despite on traditional diet that is low in red meat.[4] So, genetic or other influences that are also an important modulation of the serum uric acid level.[5] Many studies have been conducted worldwide to identify the risk factors for hyper uricemia including ethnic, enzymatic and environmental predisposition.[6] Among the acquired factors, reversible life style factor contribute to increased blood uric acid concentration. These factors were suggested to be higher Purine diet, alcohol consumption and obesity.[7]

Objective is to evaluate serum uric acid level in different communities of Greater Kamrup District and compared.

MATERIALS AND METHODS

The present study was conducted among different communities in Greater Kamrup District. Samples were

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Cite this article as: *Doungel Nomi, Borah Pollov, Thakuria KD. Ethnic variation of uric acid level among population in greater Kamrup district. Int J Health Res Medico Leg Prae 2019 July;5(2):35-37. DOI 10.31741/ijhrmlp.v5.i2.2019.8*

collected by stratified random sampling technique. Communities selected were Ahom, Adivasi, Bodo, Bengali, Karbi, Manipuri and Marwari. Serum uric acid level in different communities were evaluated and compared.

The study was carried out over a period of 2 years with total number of 280 subjects. 40 subjects from each community consisting of equal numbers of males and females (1:1). They belong from the different community with different occupations and socio-economic status, food habits. They gave informed consent to participate in the study. Subjects are evenly distributed in the age group of 25 years to 70 years.

Estimation of serum uric acid was done within 48 hours of collections of the blood samples. Using a calorimeter the biochemical estimations was done. Uricase converts uric acid to allantoin and hydrogen peroxide. The hydrogen peroxide formed further reacts with a phenolic compound and 4 aininoantipyrine by the catalytic action of peroxidase to form a red coloured quinoneimine dye complex. Intensity of the colour formed is directly proportional to the amount of uric acid present in the sample.

RESULTS

280 patients of Gout were included in this study, out of which 140 were males and 140 were females. Subjects are evenly distributed in the age group of 25 years to 70 years.

Table 1 High uric acid level among respondents of different community

Community	Total respondent	High uric acid
Boro	40	13
Ahom	40	6
Karbi	40	6
Adivasi	40	5
Bengali	40	2
Manipuri	40	2
Marwari	40	0

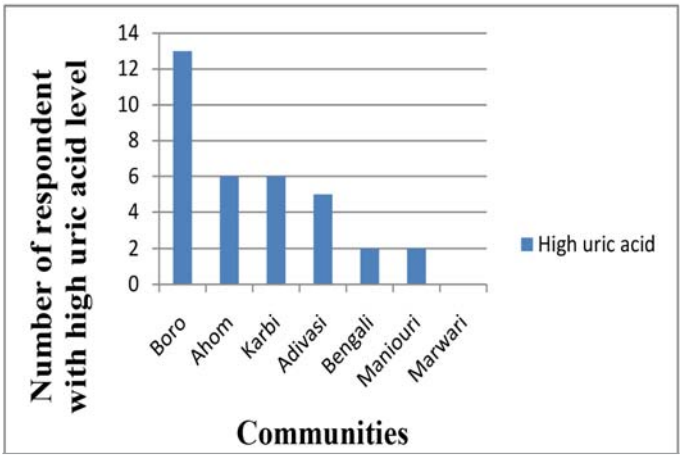

Figure 1 Distribution of high uric acid level among the respondents of different communities

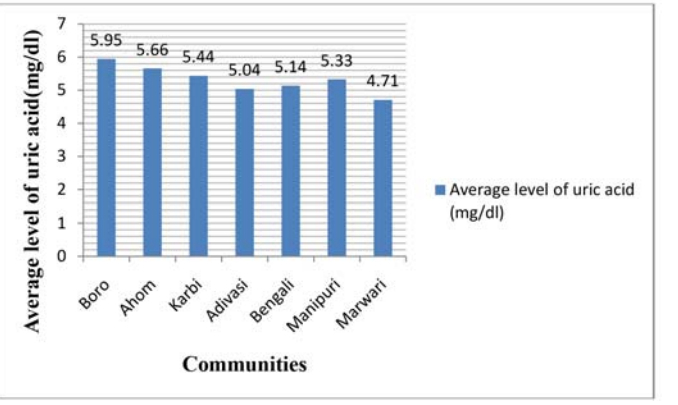

Figure 2 Average uric acid level of different community

Figure 2 Depicts uric acid level of Boro community is higher in comparisons to other communities. Uric acid level of Ahom community is found higher in comparison to Manipuri, Bengali, Adavasi and Marwari.

Table 2 Variation of uric acid level of different community

Source of variation	SS	df	MS	f
Between groups	40.43	6	6.73	5.64
Within group	325.84	273	1.19	
Total	**366.27**	**279**		

Table 2 depicts variation in high uric acid level recorded among the Boro community followed by Ahom, Karbi, Adivasi, Bengali, Manipuri significantly. No cases of high uric acid level were recorded in Marwari community.

Table 3 Uric acid level of different community vs sex

Community	Male (mg/dl)	Female (mg/dl)	t value (mg/dl)
Boro	6.69	5.22	4.1
Ahom	6.02	5.29	3.09
Karbi	6.09	4.79	3.75
Adivasi	5.43	4.65	2.3
Bengali	5.74	4.53	3.75
Manipuri	4.8	5.85	3.8
Marwari	5.09	4.34	3.57
Overall	5.69	4.95	6.12

Significant at 5% level of significance

Table 3 depicts Sex wise uric acid level is high in case of males 5.69 mg/dl, compared to females 4.95mg/d1. The average difference of uric acid level of male and female is found to be statistically significant. t - value is 6.12 mg/dl. Incidence of high uric acid level recorded among the Boro community followed by Ahom, Karbi, Adivasi, Bengali, Manipuri significantly. No cases of high uric acid level were recorded in Marwari group.

Table 3 also illustrated comparative tendency of high uric acid level is more among males as compared to females except among the Manipuri community.

DISCUSSION

It was observed in categories wise distribution the incidence of high uric acid level was nil in vegetarian categories. In Marwari, out of 40 respondent there is no record of high uric acid. Uric acid in Marwari community is 4.71 mg/dl, much less than other communities. The beneficial effect of dairy proteins relates to the fact that this type of protein cause excretion of urate and contain much lower level of purine. The findings are found to be in consistence with study carried out at different parts of the world.[8,9]

In the non-vegetarian group, often they consumed alcohol daily according to the social customs and religious rituals. It was observed that serum uric acid level in Boro community i.e. 5.95 mg/dl which was comparatively more than the other communities and this finding are similar with studies carried out by different workers.[6,10,11]

Sex wise differences have often been observed and the differences are reported to result from differences in sex hormones. Uric acid level is higher in male is 5.69 mg/dl when compared with female is 4.95 mg.

Sex wise incidence high uric acid was recorded among males in all the communities except the Ahom community. These findings are in consistence with observations of different workers.[4,12,13]

The strength of this study is that it gives some general clue over the altered serum uric acid level in relation to diet. In conclusion it is observed that intake of alcohol and not the purine intake is a strong risk for hyperuricaemia and for the development of gout. And vegetables which are rich in dietary fibres are protective against hyperuricaemia and gout.

CONCLUSION

Serum uric acid level shows significant variation in different communities like Boro community have high uric acid level in comparison to other communities. Because of their dietary habits. It was seen that there is no significant rise of high uric acid level in Marwari who are strictly vegetarian.

Sex wise high uric acid level is found in males compared to females and the average difference is statististically significant which is similar to all the community except Manipuri.

Serum uric acid may be a marker for the presence of an adverse cardiovascular diseases and it is strongly related to hypertension; hyperlipidemia; diabetes mellitus.

So, from the above study it can be concluded that different communities of Greater Kamrup district depicts different uric acid levels and association with sex. These findings can be associated with dietary habits of different communities. It can be placed in the context of overall health promotion, disease prevention and disease treatment with appropriate attention to nutritional needs in different communities.

A further bio-chemical analysis of blood in persons of different communities, both vegetarian and non-vegetarian dietary habit may help us to know different health problem in our society. Also, a thorough study is needed regarding the quantitative and qualitative evaluation of the constituent of non- vegetarian diet in different community without changing their dietary habit.

So, the above study reflects obvious scope for further work on this observation.

Conflict of interest: None declared.

Ethical clearance: Taken.

Source of funding: None declared.

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