Determining best Learning Method and Gender Preference of Learning among First Year Medical Students in an Island Medical Institution; A Cross Sectional Study

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ABSTRACT

Introduction: After finishing schools, students commencing their new journey in medical institution are representative of different strata of society, varying in cultural, ethnical, financial and educational status. This difference is more marked when it comes to an Indian group of islands, where majority of population is constituted by migrants from different states of India. Learning styles are not stable. Students might adopt different styles depending on their subject and their learning environment. Study aimed at assessment of gender preference of learning style and to design a lesson plan that addresses majority of the students.

Material and methods: A Cross Sectional study of the 1st year MBBS student (n=95) was carried out at Andaman and Nicobar islander institutes of medical science, Port Blair. For this study the VARK survey instrument (Version 7.8) questionnaire as a preference learning assessment tool consisting of 16 multiple choice questions (MCQ) was used. The data were analysed with the help of VARK advice to the users of questionnaire and SPSS version 19.

Results: This Study showed that, of the total 95 students, 64 (67.36%) were female and 31(32.63%) were male. Bimodal learning style is most preferred 48(50.5%) in which aural and kinaesthetic were most preferred method(16.8%) followed by visual kinaesthetic (13.7%). Sensory modalities differs in female student, they preferred bimodal sensory modalities 40(62.5%) mostly preferred method is Aural kinaesthetic 12(18.75%) followed by visual, kinesthetics 10(15.6%). Male student preferred trimodal sensory modalities 11(35.48%). and visual, read/ write, kinaesthetic is most preferred method but 5(16.1%). Unimodal sensory modalities is less preferred method by the all students11(11.6%).

Conclusion: The preferred learning style of the medical students in the present study were multimodal. Aural and Kinaesthetic(AK) is most preferred overall and in the Female. Visual Read/Write, and Kinaesthetic (VRK) in Male. Both male and female have preference for different sensory modalities. So mixed gender classroom allow to give opportunity to learn from each other.

Keywords: Learning Style, VARK, Sensory Modalities, Bimodal.

INTRODUCTION

After finishing school, students commencing their new journey in medical institution are representative of different strata of society, varying in cultural, ethnical, financial and educational status. This difference is more marked when it comes to an Indian group of islands, where majority of population is constituted by migrants from different states of India. These students have different level of preparation and preferences of learning which is mainly governed by their training and other local circumstances. When they start their journey in a medical college they are exposed to a totally new world with different scenarios, curriculum and teaching methods, varying vastly from school days. This makes learning and understanding the subject more challenging. Learning styles are not stable hence students might adopt different styles depending on their subject and their learning environment [1] As the student have significantly different learning style it is the responsibility of the instructor to develop appropriate learning approaches (Tunner 2004)[2]

MATERIAL AND METHODS

For the purpose of the study ethical approval was obtained from the institutional ethical committee and written informed consent was taken from all participants regarding their participation in the study. In this cross sectional study which was conducted at Andaman and Nicobar institute of medical sciences Port Blair during month of September 2017,100 students both male and female, participated. During the regular lecture hours of Anatomy, students were briefed about the study and VARK questionnaire was distributed after obtaining consent. Out of 100 students, 95 first year students completed the study, as 5 were absent on that day. Data was collected and analysed using SPSS software (version 19).

For this study VARK questionnaire was utilised as a preference learning assessment tool,consisting of 16 multiple choice questions (MCQ). We selected VARK survey instrument (Version 7.8) constructed by Neil Fleming[3]. It is

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used because it is a well-received, simple, intuitively understood inventory and its application are concise and quick to complete.[4] Each Questions having four choices corresponding to four sensory learning modalities.ie V(Visual), A(aural), R(Read/write) & K(Kinaesthetic) Students were free to opt one or more than one choices, best suited for them.

RESULTS

Out of 100, 95 (95%) students who participated in study 64 (67.36%) were female and 31(32.63%) were male. (Table- 1)

Learning style preferences

Most of the student 84(88.4%) preferred multimodal sensory modalities while 11(11.57%) of 95 preferred unimodal. Among multimodal sensory modalities most participants 48(50.05%) preferred bimodal,28(28.4%) trimodal and remaining 9(9.5%) preferred quad modal of sensory modalities. (TABLE-2)

Among Unimodal sensory modalities mostly 6 (6.31%) preferred Kinaesthetic, followed by aural 3(3.15%), 1(1%) equally preferred Visual & read/write. Among bimodal (n=48)sensory modalities, mostly 16(16.8%) preferred aural, kinaesthetic (AK) followed by 13(13.7%)visual kinaesthetic (VK),9(9.5%) visual aural (VA),5(5.3%) Aural read/write(AR),4(4.2%) read/write kinaesthetic (RK), and 1(1.1%)visual read/write(VR)). Among trimodal (n=27)sensory modalities mostly preferred visual, aural, kinaesthetic (VAK) by 10(10.5%) followed by 9(9.5%) visual, read/write, kinaesthetic (VRK), and 8(8.4%) aural, read/write, kinaesthetic (ARK)All four sensory modalities(VARK) i. e quad modal preferred by 9(9.5%) of 84 as shown in the table 2.
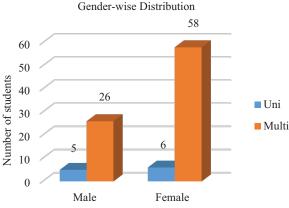

Figure-1: Showing Gender wise distribution of 1st year MBBS students

	Unimodal		Multimodal		To-tal
	n	**%**	**n**	**%**	
Male	5	16.13%	26	83.87%	31
Female	6	9.38%	58	90.63%	64
Total	11	11.58%	84	88.42%	95

Table-1: Showing distribution of students and preference of VARK sensory modalities

Table-2: Showing the learning style preference in 1st year MBBS students

Uni-modal n=11 (11.6%)

	n	%
Visual	1	1.05%
Aural	3	3.16%
Read/Write	1	1.05%
Kinesthetic	6	6.32%

Bi-modal n=48 (50.5%)

	n	%
Visual, Aural	9	9.47%
Visual & Read Write	1	1.05%
Visual, Kinesthetic	13	13.68%
Aural & Read/write	5	5.26%
Aural & Kinesthetic	16	16.84%
Read/write & Kinesthetic	4	4.21%

Tri-modal n=27 (28.4%)

	n	%
Visual, Aural, Read/Write	0	0.00%
Visual, Aural, Kinesthetic	10	10.53%
Visual & Read Write, Kinesthetic	9	9.47%
Aural & Read/write, Kinesthetic	8	8.42%

Quad-modal n=9 (9.5%)

	n	%
VARK	9	9.47%

n = number of students, VARK= all 4 sensory modalities

Table-3: Showing the data analysis of the 1st year MBBS Female students

Uni-modal n=6 (9.38%)

	n	%
Visual	1	1.56%
Aural	0	0.00%
Read/Write	1	1.56%
Kinesthetic	4	6.25%

Bi-modal n=40 (62.50%)

	n	%
Visual, Aural	8	12.50%
Visual & Read Write	1	1.56%
Visual, Kinesthetic	10	15.63%
Aural & Read/write	5	7.81%
Aural & Kinesthetic	12	18.75%
Read/write & Kinesthetic	4	6.25%

Tri-modal n=16 (25.00%)

	n	%
Visual, Aural, Read/Write	0	0.00%
Visual, Aural, Kinesthetic	6	9.38%
Visual & Read Write, Kinesthetic	4	6.25%
Aural & Read/write, Kinesthetic	6	9.38%

Quad-modal n=2 (3.13%)

	n	%
VARK	2	3.13%

Table-4: Showing the data analysis in the 1st year MBBS Male students

		Uni-modal n=5 (16.13%)		Bi-modal n=8 (25.81%)		Tri-modal' n=11 (35.48%)		Quad-modal n=7 (22.58%)	
		n	%	n	%	n	%	n	%
Visual	Visual, Aural	0	0.00%	1	3.23%	0	0.00%		
Aural	Visual & Read Write	3	9.68%	0	0.00%	4	12.90%		
Read/Write	Visual, Kinesthetic	0	0.00%	3	9.68%	5	16.13%		
Kinesthetic	Aural & Read/write	2	6.45%	0	0.00%	2	6.45%		
	Aural & Kinesthetic			4	12.90%			VARK	7	22.58%
	Read/write & Kinesthetic			0	0.00%				

Column headers for Tri-modal/Quad-modal rows: Visual, Aural, Read/Write; Visual, Aural, Kinesthetic; Visual & Read Write, Kinesthetic; Aural & Read/write, Kinesthetic; VARK.

Gender and learning style preferences

Data analysis of female showed 58(90.6%) out 64 preferred multimodal learning method and 6(9.38%)out of 64 participant preferred unimodal as shown in Table 3. Among female participants 4 (6.25%) of 6, mostly preferred kinaesthetic and 1(1.56%) each preferred visual and read/write method of learning. Out of 58 females, 40(62.50%) preferred bimodal, 16(25%) preferred trimodal and 2(3.13%) quad modal of sensory modalities. (Table 3). Among bimodal (n=40), Mostly 12(18.75%) preferred Aural Kinaesthetic (AK),10(15.6%) visual kinaesthetic (VK), 8(12.5%) Visual Aural (VA), 5(7.8) aural &read/write (AR), 4(6.25) Read /write and kinaesthetic (RK) and 1 (1.56%) preferred visual read/write method of learning. Among trimodal sensory modalities (n=16), 6(9.37%) of them equally preferred Visual, Aural, Kinaesthetic (VAK) & Aural, Read/write, Kinaesthetic(ARK) followed by 4(6.25%) preferred visual, read/write, kinaesthetic(VRK) method of learning. And lastly 2(3.13%) of female learner preferred quad modal (all sensory modalities, VARK) of learning. (Table 3)

Data analysis of male participants(n=31) 26(83.87%) out of 31 preferred multimodal method of learning and 5(16.13%) preferred unimodal (Shown in Table-4) Among unimodal(n=5), mostly 3(9.7%) preferred Aural followed by 2(6.5%) kinaesthetic. In bimodal (n=8),4(12.9%) preferred aural, kinaesthetic(AK),3(9.7%) preferred visual, kinaesthetic(VK) and 1(3.2%) visual, aural(VA).Most male participant 11(35.48%) of 26 preferred trimodal sensory modality, Among them 5(16.1%) preferred visual, read/write, kinaesthetic(VRK), 4(12.9%) visual, aural, kinaesthetic (VAK), 2(6.5%) preferred aural, read/write, kinaesthetic(ARK) and 7(22.6%) participants preferred quad modal (all 4 sensory modalities, VARK)

DISCUSSION

Both behavioural and cognitive theories of learning agrees that difference among learner is highly influenced by surrounding environment and previous academic exposure of learners [5]. The use of VARK questionnaires to determine the preferred learning styles of students, may be helpful to design the course/lecture for large group of learner and improve the quality of teaching.

In our study most of the students (79.8%) prefer to learn best by multimodal sensory modalities, similar result have been reported by researchers from different region.[6,7,8,9] In our study the male and female students reacted differently, male students mainly preferred trimodal (35.48%), and most of the female student preferred Bimodal (62.5%) sensory modalities. (shown in figure 1). Thus male and female significantly differ in learning style, this study is consistent with Wherein EA, et al(2007) [10] and Dobson2010,Rogers 2009[11].However a study done by Baykan and Nacar(2014) [6] and Bhaskar 2011;[12] Slater,Lujan & Dicarlo 2007[13] in first year medical students showed no sex predilection in method of preference. Multimodal students prefer to absorb information's through variety of modes. These students do not like to learn by sitting in a classroom listening to lectures. These students must talk about what they are learning, write about it, relate it to past experience and knowledge, and apply it to their daily lives[8.]

In our study most of the female student preferred aural, kinaesthetic (AK) 12.6% mode followed by visual, kinaesthetic (VK) 10.5% mode, it means they absorb information best by audio, images, charts maps and practical interactions. In our study most of the male students preferred visual, read/write, kinaesthetic (VRK) 16.1%, next to it was visual, aural, kinaesthetic (VAK) it means they absorb informations by listening to the lectures, making notes, videos, images and most importantly by practical sessions. In our study unimodal style of learning most preferred mode is kinaesthetic (6%) among both male and female students followed by aural, visual and read/write with equal preference. Kinaesthetic learner are more of tactile learner who gain more through real life examples, debates, working modals etc. Aural mode preferred by 3%, meaning these students learn best by attaining lectures classes, they like to record lectures. It is important to emphasize that students will only remember 20% of what they read,30% of what they hear, 40% of what they see, 50% of what they say, and 60% of what they do, this average increases to 90% for information they say, hear, see, and do[10] Generally class room teaching is in the form of Lectures, which is a type of auditory learning, where one-hour lecture is delivered and massage is passed from

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instructor to learner. But in our study it is evident that only 3 (9.7%) among male students preferred it as learning modalities while none of the female participant choose it as a preferred learning method.

This huge discrepancy in teaching and learning process effects inversely in the learning process. The gap between instructor's way of teaching and learner preference has to be considered for effective learning. Unimodal method of learning is not preferred, however kinaesthetic learning is most accepted method, hence inclusion of doing, touching, experiencing and being active in some form or other.

Limitation of study

This study had some potential limitation that may have affected the results. it was limited to single island medical college and sample size.

CONCLUSION

The preferred learning style of sensory modalities of medical students in the present study were multimodal. Aural and Kinaesthetic(AK) in Female and Visual Read/Write, and Kinaesthetic(VRK) in Male. Both male and female differs in sensory modalities of learning, so mixed gender classroom allow to give opportunity to learn from each other. Because of different course curriculum of medical education from others, teachers should use active learning strategies in addition to the traditional lecture format, like use of videos, working modal, demonstrations, charts, correlation with daily life experiences and in this way the students would understand the subject and perform better and become good clinicians or doctors.

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