



ORIGINAL ARTICLE

## Preferred learning styles and strategies among the undergraduate students of forensic medicine.

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**ABSTRACT... Objective:** To evaluate the learning styles and strategies among the undergraduate students of forensic medicine. **Study Design:** Cross-sectional study. **Setting:** Al-Tibri Medical College and Hospital, Isra University Karachi Campus. **Period:** January 2022 to June 2022. **Material & Methods:** 100 undergraduate students of forensic medicine were selected for this study, after taking a verbal consent and explain the proforma about the learning style using the VARK questionnaire, along with their preferred learning strategies. Then the learning styles were also correlated with gender using the independent t-test. Data was tabulated in mean and standard deviation form for quantitative variables. The data was analyzed using SPSS version 20.0 and the p-value of <0.05 was kept as significant. **Results:** Out of the 100 participants in our study, 53 were female while 47 were male. When it came to preferred learning strategy the most preferred was CBL (91%), followed by TBL (86%), and practical (82%). Read-write had the highest mean  $\pm$  S.D for male ( $7.41 \pm 1.80$ ) and female ( $7.21 \pm 1.09$ ). Followed by kinesthetic (male:  $7.85 \pm 2.14$ , female:  $6.31 \pm 1.20$ ). Significant difference in gender correlation was only seen in Auditory ( $p=0.04$ ). **Conclusion:** Read-write was the preferred learning style according to the VARK theory, while CBL was the preferred learning strategy in undergraduate students of forensic medicine due to student centered learning approach.

**Key words:** CBL, Forensic Medicine, VARK.

### INTRODUCTION

Like many fields of medicine, forensic medicine is also a large and vast field. Forensic medicine of the modern era is not just associated with diagnosing deaths, carrying out autopsies, and other related problems, in fact, it is much more than that but it is also part of legal medicine.<sup>1</sup> The legal requirements had led to the development of forensic medicine in relation to law, thus there has been improvement in the domain of forensic medicine.<sup>2</sup> In south Asia forensic medicine although has been established at the same time period as the other developed countries around the world, however, its further development has stagnated and thus has led to an underdeveloped medical setup in South Asia.<sup>3</sup> As forensic medicine is an integral part of the field of medicine, it needs to be learned and taught effectively. There are a number of learning

styles that help in the facilitation of individuals in the given circumstances.<sup>4</sup> Students might have different types of learning styles that suit them.<sup>5</sup> The knowledge pertaining to forensic medicine is deemed limited, thus there needs to be a system in place to develop skills, support, and most importantly deliver high-quality-forensic investigations. A study showed that students showed a high acceptance when teaching was based through practical activities and education was delivering through active learning in forensic medicine.<sup>6</sup> There are many types of learning styles developed along with learning style inventories and identifying the correct learning style is meant to not limit but expand an individual by allowing him to comprehend, grasp knowledge, and work more efficiently.<sup>7</sup> A study conducted on the contemporary teaching methods showed that most students prefer the problem based learning

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and case studies method as the best teaching method at the undergraduate level.<sup>8</sup>

This type of study has not been conducted on students studying forensic medicine. Therefore, a cross-sectional study was conducted to determine the preferred learning style and strategies among the undergraduate students of forensic medicine.

**MATERIAL & METHODS**

A cross-sectional study was conducted on 100 undergraduate students of forensic medicine at the Al-Tibri medical college, Isra University Karachi campus. This study spanned for 6 months after ethical approval for this study was obtained from the institutional review board (ATMC/IERC/02-2021/10), and was conducted from January 2022 to June 2022. In this study 4 modules of forensic medicine was assessed and it was through these modules that our study used to obtain data from the students. The students were informed about their participations in the study, and were allowed to withdraw from the study if they wanted to. The students were asked their preferred learning strategy in forensic medicine and the VARK questionnaire was used to assess their preferred learning style. Students were also asked to mention the combination of learning style that they preferred. All the data was collected and represented in mean and standard deviation form. Analysis of the data was carried out using statistical package of social sciences (SPSS Version 20.0) while for determining the correlation of gender with a learning style, the independent t-test was performed. The p-value was set at <0.05.

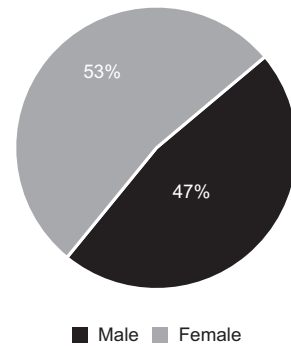
**RESULTS**

Figure-1 shows the gender distribution of the study.

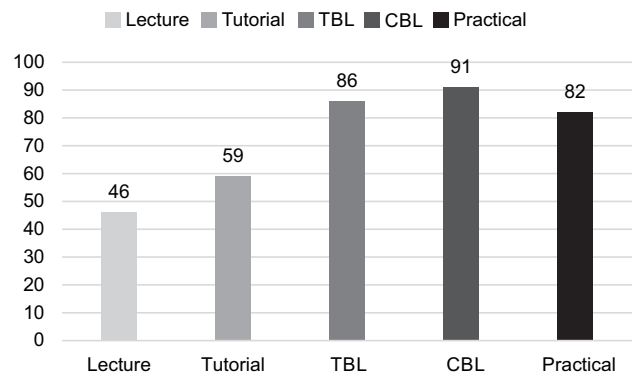
Figure-2 shows the % of preferred learning strategies among the medical students of forensic medicine.

Figure-3 shows the % of multiple combinations of learning style according to the gender.

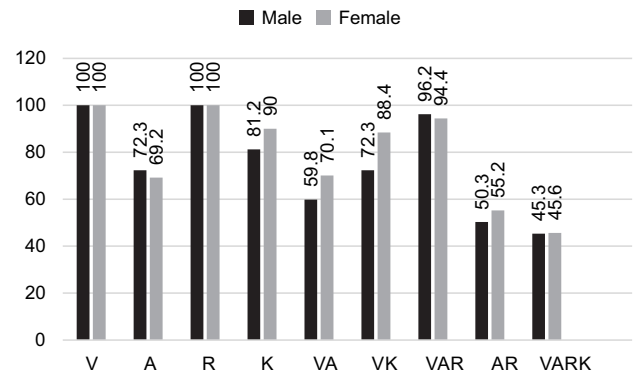
Table-I shows the Mean ± SD of gender based VARK score with level of significance.



**Figure-1. Shows % of gender distribution**



**Figure-2. Shows % of preferred learning strategies among the Medical students of Forensic Medicine**



**Figure-3. Shows the % of multiple combinations of Learning Style according to Gender**

VARK Modes	Gender	Mean±SD	P-Value
Visual	Male	5.21±1.21	0.456
	Female	5.47±1.05	
Auditory	Male	5.14±2.14	0.04*
	Female	4.34±2.17	
Read-Write	Male	7.41±1.80	1.305
	Female	7.21±1.09	
Kinaesthetic	Male	6.31±1.20	0.174
	Female	7.85±2.14	

**Table-I. Shows the Mean±SD of gender based VARK score with level of significance**

## DISCUSSION

Forensic medicine must be taught adequately at the undergraduate level, as for some it may be the only academic source to acquire knowledge in their carrier and it is the job of the institutions and its esteemed faculty to provide it in a well mannered and engaging way, to bring the best out of medical students.<sup>9</sup> Everyone has a different style of acquiring knowledge and learning that knowledge. It requires the ability to understand, comprehend, and retain the information. The VARK is a good tool that can be used for the assessment of learning styles. In our study most of the Male and female choose the read-write and kinesthetic overall however there was no significant difference to be found in the genders that choose read-write and kinesthetic, and neither was this seen in visual learning style.

However, significant gender difference was seen in Auditory learning style ( $p=0.04$ ). A similar study also found Kinesthetic and the read-write as the most dominant mode out of the 192 undergraduate students that participated in it.<sup>10</sup> Studies have shown that when it comes to learning styles, the multimodal learning style is deemed more prominent than the unimodal one, however if unimodal learning style is only factored in then the kinesthetic type is the most preferred, this is somewhat in line with our study as well.<sup>11</sup> In our study most of the participants choose multimodal styles of learning in different combinations over a single mode of learning. However, there are also contrasting findings to one seen in our study as one study conducted in India showed that auditory (45.5%) learning was the dominant unimodal learning style preference, while kinesthetic (33.1%) was second on the list, but even in this study most of the students preferred a multimodal (68.7%) learning style as opposed to a unimodal one (31.3%).<sup>12</sup>

Therefore it can be stated that although most of the students prefer multimodal type of learning style, what type of learning style individually state suites them is still highly variable and open to discuss still. When it came to the preferred learning strategies of undergraduate students in forensic medicine, most of the students preferred

case-based learning (CBL), followed by task-based learning (TBL), and lastly practical. Studies have shown that indeed CBL is highly appreciated by most of the students, as it helps them towards self-study, provides improving in their ability to problem solve, and gives them a better grasp on the retention of knowledge.<sup>13</sup> Teaching innovation is the need of hour right now, especially in a speciality like forensic medicine and needs to be implemented throughout Pakistan.

## CONCLUSION

The most prevalent learning style in our study was read-write followed by kinesthetic, however, the multimodal approach is more preferable. Student prefers the Case-based learning strategy the most as compared to other teaching strategies.






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### AUTHORSHIP AND CONTRIBUTION DECLARATION

No.	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Shahid Kamran	Conceptualization, Study conduction, Data analysis.	
2	Rakhshinda Younus	Data collection.	
3	Omairah Tauqir	Data collection.	
4	Nadia Gul	Manuscript writing.	
5	Fouzia Kirmani	Data collection and Analysis.	
6	Muhammad Aijaz	Proof reading.	