THE USE OF CHAT GPT IN ACADEMIA: KNOWLEDGE, ATTITUDE, AND PRACTICES OF UNDERGRADUATE STUDENTS IN LAHORE, PAKISTAN

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ABSTRACT

The main objective of this research is to investigate undergraduate students' knowledge, attitudes, and practices regarding the use of generative artificial intelligence (GenAI), with a focus on ChatGPT, in academic settings. Moreover, it was also aimed to see differences in knowledge, attitude, and practices of ChatGPT concerning gender, family system, living status, and academic year of the participants. This is a quantitative study that followed a cross-sectional research design. A nonprobability convenience sample of 665 students participated in the study. Participants were approached through online social networking platforms. The mean age range of students was *21.36 (SD=1.66)*. Most students were sophomores (31%) or seniors (29%). A Google survey was designed and a structured KAP (knowledge, attitude, and practice) questionnaire was shared along with a research information sheet, written informed consent, and demographic sheet. The results revealed a nuanced understanding of GenAI among students, with significant proportions acknowledging ChatGPT's user-friendly interface and effectiveness for learning yet expressing concerns about repetitive information and threats to academic integrity. Attitudes towards ChatGPT demonstrate a balance between positive perceptions of efficiency and concerns regarding its impact on critical thinking and academic fairness. Practices associated with ChatGPT usage highlight students' reliance on the tool for academic support, albeit with varied approaches toward incorporating generated content into assignments. Moreover, there were no statistically significant differences in knowledge, attitude, and practices of ChatGPT among gender, family system, living status, and academic year. These findings show the need for targeted educational interventions to promote responsible and effective GenAI use, foster critical thinking, and address ethical considerations, ensuring that these tools positively contribute to students' learning experiences, rather than being rejected altogether.

Keywords: Chat GPT, Academia, Knowledge, Attitude, Practices. KAP

INTRODUCTION

Integrating artificial intelligence (AI) technologies, such as Chat GPT, in academia, has gained prominence in recent years. Given its increasing use in academia, it is important to understand students' knowledge, attitudes, and practices regarding generative AI so that the resultant information can be utilized to gain valuable insights and maximize the potential usefulness of generative AI in educational settings. Generative artificial intelligence (generative AI) is primarily a tool used for producing new content that is frequently identical to that created by humans. In contrast to conventional artificial intelligence systems that follow predetermined guidelines or rely on rules, generative AI utilizes algorithms and models to comprehend and imitate patterns present

in training data. Due to its capacity to process intricate instructions and provide output resembling that of a human, GenAI is now being studied and used in a variety of industries, including media, tourism, healthcare, and education.

Examining how students understand, use, and view this revolutionary technology is crucial as more and more educational institutions integrate generative AI techniques to improve student learning. However, in Pakistan, the research on GenAI has just started as it is a relatively new concept, and academicians and researchers all over the world are exploring new dimensions of GenAI every passing day. The potential of this technology to improve practices in higher education and transform discipline procedures like writing (Biswas, 2023; Kitamura, 2023), surgery (Bhattacharya et al., 2023), and communications within academic disciplines (Eggmann et al., 2023) has been discussed extensively. It has also been discussed as a tool for enhancing learning in higher education (Adiguzel et al., 2023; Baidoo-Anu & Ansah, 2023). It also maximizes students learning because of its ability to generate unique and creative output in response to their cues. Generative AI cannot only help students with their writing (Chan & Lee, 2023), but it can also improve the quality of their writing by providing feedback (Atlas, 2023). GenAI tools are useful resources to generate ideas, synthesize existing knowledge, and summarize larger data sets (Berg, 2023; Chan & Zhou, 2023). Assessment and providing feedback are other areas where GenAI might be useful (Crompton & Burke, 2023). Tools like Intelligent Essay Assessor can be used to grade students' written work and provide feedback in the form of comments (Landauer, 2003). The findings of studies that were conducted to evaluate the accuracy of ChatGPT in essay scoring demonstrate that it reduced the time required for grading, provided consistent scores, and offered students speedy evaluation and marks on their writing abilities. These results reveal the potential of GenAI to transform academia by redefining student outcomes and updating the coaching and learning practices (Mizumoto & Eguchi, 2023).

However, there have also been concerns raised over the limitations associated with GenAI as well as problems with academic integrity, ethics, and plagiarism. Although Artificial intelligence (AI)

generated answers to academic writing are reported to be largely unique and pertinent to the subjects, they lack human viewpoints and make improper connections (Kumar, 2023). Moreover, it is difficult for users who are not native English speakers to build prompts as it calls for a certain proficiency in the language. Also, relying too much on GenAI tools could harm students' attempts to improve their writing abilities as it leaves less room for creativity and brainstorming (Warschauer et al., 2023). Furthermore, if a model was trained on a dataset that contains components of bias, inaccuracy, or harm, the material generated by GenAI may be prejudiced, inaccurate, or harmful (Harrer, 2023). For example, photos produced by AI may be used maliciously for deepfakes or contain explicit or nude content (Maerten & Soydaner, 2023). The use of GenAI tools necessitates human monitoring because they are unable to evaluate the veracity of content or discern whether the output they produce contains lies or disinformation (Lubowitz, 2023). Not only that, but it can also be challenging to tell whether a particular piece of writing is the author's original work because most plagiarism checkers are unable to identify AI-generated output (Peres et al., 2023). In the context of AI-generated work, it raises the question of how to differentiate ethical practices from non-ethical ones when it comes to issues related to copyrights, authorship credits, and plagiarism (Chan, 2023). Some researchers (e.g. Zhai, 2022) advise against using text generators like ChatGPT since it may threaten the reliability of assessment procedures, especially those that require written assignments. Therefore, there is a real risk to academic integrity in higher education from the widespread usage of GenAI. In higher education settings the focus is on developing holistic competencies including creativity and critical thinking.

While the advantages of GenAI highlight the technology's potential as an important learning aid for students, its drawbacks and difficulties highlight the need for more research on the best ways to include GenAI in the teaching and learning process (Chan & Tsi, 2023). Therefore, students' knowledge, attitudes, and practices of generative AI seemingly have a significant impact on their academic path and future career aspirations. Students' perception of generative AI is reflected in their knowledge of the technology, its features,

and its possible uses in educational environments. Students' overall viewpoint on the incorporation of generative AI into education is shaped by their attitudes, which include their feelings, predispositions, and evaluative judgments about the technology. In the discussed context, the researchers, academicians, policymakers, and technology developers need to have an in-depth insight into the triad of knowledge, attitude, and perception. As, the acceptability, engagement, and alignment of students with instructional objectives are critical factors that determine the efficacy of generative AI technologies in educational settings. The present study therefore seeks to explore the existing state of knowledge, prevalent attitudes, and developing perceptions of the students about generative AI. It is important to understand students' awareness of generative AI to identify gaps in their knowledge and point out misconceptions. By doing this, the study aims to add to the empirical literature on the moral, pedagogical, and social ramifications of using generative AI in the classroom. Teachers and other stakeholders can more effectively integrate generative AI technologies into their lessons by getting insights into students' knowledge, attitudes, and views. This will help to ensure that the tools support positive learning experiences and are in line with educational objectives.

Materials and Method

A cross-sectional study was carried out to obtain information regarding knowledge, attitude, and practice towards Gen AI among undergraduate students of Lahore, Pakistan. Data collection was carried out after obtaining approval from the Institutional Review Board (IRB) of FCCU for ethical considerations and methodological soundness. A Google form was generated with a research information sheet, consent form, and a demographic profile including, age, gender, academic major, academic year in university, joint/nuclear family system, and whether students are living in hostels or coming as day scholars. The survey was developed to address three aspects of Gen AI including knowledge, attitude, and practice. In total 15 items were developed four items related to knowledge, seven items related to attitude, and four items related to practice. A five-point Likert-type scale was used with strongly agree (5) to strongly disagree (1). A convenient sampling strategy was used, and a Google form was distributed through online social media platforms like Facebook, Instagram, and students' WhatsApp groups. Participants were told that their participation was voluntary and that they had the right to withdraw at any time during or after the completion of the survey. The survey was anonymous and no identification or confidential information was recorded. The basic eligibility to be included is that students are using ChatGPT. Research information and informed consent were sought to proceed with data collection.

According to sample size calculation 665 or more measurements/surveys are needed to have a confidence level of 99% that the real value is within ±5% of the measured/surveyed value when 50% population proportion was considered. After data cleaning, 665 participants' responses were used for data analysis. The mean age range of students was 21.36 (SD=1.66), 348 were male, 296 were female, 10 were binary and one preferred not to disclose gender. Most of the participants (153, 31%) were in their second year of university while 144 (29%) were seniors 114 (23.4%) were juniors and 74 (15.3%) were freshmen. 389 were day scholars and the rest were living in hostels. 129 belong to a joint family system while living in a nuclear family system. Most of the students reported that they use Gen AI, especially ChatGPT for academic purposes including writing assignments, term papers, and literature reviews. Some also reported that they used ChatGPT in personal and academic communications like writing emails, text messages, and Instagram story descriptions.

Results
Participant Characteristics

A total of 665 students participated in the study, as shown in Table 1. Most of the students were male (53.1%). Most of the students were sophomores (25.2%) or seniors (29.9%) as well as day scholars (79.1%). Most students resided in a nuclear family system (71%). The main purpose of using ChatGPT was for education (37.6%) followed by class assignments (35.5%), and lastly final projects, thesis, and research papers (21.2%).

TABLE 1 Characteristics of the study population.

		Frequency	Percentage %
Gender	Male	348	53.1
	Female	296	45.2
	Non-binary	10	1.5
	Prefer not to say	1	0.2
Academic year	Freshmen	107	16.3
	Sophomore	187	28.5
	Junior	165	25.2
	Senior	196	29.9
Family system	Joint	190	29.0
	Nuclear	465	71.0
Living status	Day scholar	518	79.1
	Hostelite	137	20.9
The main purpose of using ChatGPT	Education	246	37.6
	Final projects, thesis, research papers	139	21.2
	Class assignment	167	25.5
	Entertainment	41	6.3
	Personal communication	31	4.7
	Customer service	5	0.8
	Other	26	4.0

Knowledge of ChatGPT

The mean score of knowledge of ChatGPT was 13.92 $\pm$ 3.15. 231 (35.3%) students agreed that ChatGPT is a user-friendly platform and 188 (28.7%) strongly agreed. Similarly, 232 (35.4%) agreed that it is an effective tool for learning in terms of speed and accuracy and 157 (24%) strongly agreed. However, 186 (28.4%) students agreed that ChatGPT provides inadequate and repetitive information and 169 (25.8%) agreed that it is a threat to academic integrity (Table 2). As shown in Table 3, there were no statistically significant differences in knowledge of ChatGPT among gender ($p = 0.158$), family system ($p = 0.359$), living status ($p = 0.197$), and academic year ($p = 0.515$).

Attitude of ChatGPT

The mean score of attitudes of ChatGPT was 22.96 $\pm$ 5.11. As shown in Table 2, 184 (28.1%) students agreed to continue using ChatGPT for academic purposes whereas 183 remained neutral (27.9%). 181 (27.6%) students remained neutral when asked if they believe ChatGPT has increased their performance and 170 (26%) agreed. However,

most agreed that ChatGPT has reduced the stress of meeting deadlines (282, 27.8%). 205 (31.3%) participants strongly agreed that it's unfair for someone who did their work to get the same grade as someone who used ChatGPT but 160 (24.4%) remained neutral. 212 (32.4%) answered 'neutral' when asked if the benefits outweigh the risks of using ChatGPT for academic reasons and 180 (27.5%) agreed. When asked about ChatGPT lowering their ability to critically analyze things, 142 (21.7%) agreed and 141 (21.5%) were neutral. However, 194 (29.6%) strongly agreed that ChatGPT has reduced students' ability for creative thinking and 163 (24.9%) agreed. As shown in Table 3, there were no statistically significant differences in attitude of ChatGPT among gender ($p = 0.077$), family system ($p = 0.778$), living status ($p = 0.088$), and academic year ($p = 0.216$).

Practice of ChatGPT

As shown in Table 3, there were no statistically significant differences in practice of ChatGPT among gender ($p = 0.912$), family system ($p = 0.853$), living status ($p = 0.619$), and academic year ($p = 0.550$).

TABLE 2: Survey responses for knowledge, attitude, and practice of ChatGPT.

		Frequency	Percentage %
Knowledge			
ChatGPT provides inadequate and repetitive information.	Strongly Disagree	51	7.8
	Disagree	115	17.6
	Neutral	183	27.9
	Agree	186	28.4
	Strongly Agree	120	18.3
ChatGPT is a user-friendly platform	Strongly Disagree	37	5.6
	Disagree	66	10.1
	Neutral	133	20.3
	Agree	231	35.3
	Strongly Agree	188	28.7
ChatGPT is an effective tool for learning in terms of speed and accuracy.	Strongly Disagree	48	7.3
	Disagree	80	12.2
	Neutral	138	21.1
	Agree	232	35.4
	Strongly Agree	157	24.0
It is a threat to academic integrity.	Strongly Disagree	74	11.3
	Disagree	103	15.7
	Neutral	159	24.3
	Agree	169	25.8
	Strongly Agree	150	22.9
Attitude			
I plan to continue using ChatGPT for academic support in the future	Strongly Disagree	72	11.0
	Disagree	99	15.1
	Neutral	183	27.9
	Agree	184	28.1
	Strongly Agree	117	17.9
I believe that ChatGPT has increased my academic performance.	Strongly Disagree	81	12.4
	Disagree	126	19.2
	Neutral	181	27.6
	Agree	170	26.0
	Strongly Agree	97	14.8
The benefits overweight the risks of using ChatGPT for academic purposes.	Strongly Disagree	44	6.7
	Disagree	110	16.8
	Neutral	212	32.4

	Agree	180	27.5
	Strongly Agree	109	16.6
ChatGPT is lowering the ability of my mind to analyze things critically.	Strongly Disagree	122	18.6
	Disagree	136	20.8
	Neutral	141	21.5
	Agree	142	21.7
	Strongly Agree	114	17.4
It's unfair if someone who did their own work gets the same grade as someone who used ChatGPT.	Strongly Disagree	78	11.9
	Disagree	76	11.6
	Neutral	160	24.4
	Agree	136	20.8
	Strongly Agree	205	31.3
ChatGPT has reduced my stress of meeting deadlines.	Strongly Disagree	70	10.7
	Disagree	107	16.3
	Neutral	151	23.1
	Agree	282	27.8
	Strongly Agree	145	22.1
ChatGPT has reduced students' ability for creative thinking.	Strongly Disagree	81	12.4
	Disagree	84	12.8
	Neutral	133	20.3
	Agree	163	24.9
	Strongly Agree	194	29.6
Practice			
Whenever I am assigned any task ChatGPT is my first option.	Strongly Disagree	100	15.3
	Disagree	165	25.2
	Neutral	193	29.5
	Agree	125	19.1
	Strongly Agree	72	11.0
I rely on ChatGPT for academic support	Strongly Disagree	86	13.1
	Disagree	144	22.0
	Neutral	183	27.9
	Agree	155	23.7
	Strongly Agree	87	13.3
I copy data from ChatGPT directly to my written assignments without the fear of plagiarism	Strongly Disagree	212	32.4
	Disagree	125	19.1
	Neutral	123	18.8
	Agree	111	16.9

	Strongly Agree	84	12.8
I keep on procrastinating my work till the last moment as I know I will be able to finish it with the help of ChatGPT.	Strongly Disagree	108	16.5
	Disagree	145	22.1
	Neutral	167	25.5
	Agree	125	19.1
	Strongly Agree	110	16.8

TABLE 3 Difference in Knowledge, Attitude, and Practice scores of ChatGPT based on Gender, Family system, Living status, and Academic year.

		M	SD	*p*-value
Knowledge	Male	13.77	3.31	0.158
	Female	14.12	2.99	
Attitude	Male	22.60	5.12	0.077
	Female	23.32	5.13	
Practice	Male	11.39	3.74	0.912
	Female	11.36	3.63	
Knowledge	Joint family	13.75	2.93	0.359
	Nuclear family	14.00	3.24	
Attitude	Joint family	22.87	4.95	0.778
	Nuclear family	22.99	5.17	
Practice	Joint family	11.39	3.48	0.853
	Nuclear family	11.45	3.79	
Knowledge	Day scholar	14.01	3.12	0.197
	Hostelite	13.62	3.27	
Attitude	Day scholar	23.13	4.99	0.088
	Hostelite	22.29	5.51	
Practice	Day scholar	11.39	3.67	0.619
	Hostelite	11.57	3.83	
Knowledge	Freshmen	14.00	3.35	0.515
	Sophomore	13.63	3.21	
	Junior	14.06	3.17	
	Senior	14.06	2.97	
Attitude	Freshmen	23.15	4.53	0.216
	Sophomore	22.37	5.09	
	Junior	22.90	5.64	
	Senior	23.45	4.93	
Practice	Freshmen	11.17	3.60	0.550
	Sophomore	11.50	3.76	
	Junior	11.21	3.91	
	Senior	11.69	3.51	

Discussion

The integration of generative artificial intelligence (GenAI) tools, particularly ChatGPT, in academia, has brought about significant shifts in educational practices, offering novel possibilities for student learning and engagement. This section delves into a discussion of the study results, exploring the nuanced landscape of students' knowledge, attitudes, and practices concerning ChatGPT in the academic context.

The survey results unveil a multifaceted view of students' knowledge about ChatGPT. A substantial proportion of participants (64%) recognize ChatGPT as a user-friendly platform, with a notable consensus (59.4%) on its effectiveness for learning due to its speed and accuracy. However, a noteworthy concern arises as a considerable number of students (46.7%) express reservations about the tool providing inadequate and repetitive information. Furthermore, a significant subset (48.7%) of participants perceive ChatGPT as a potential threat to academic integrity.

These findings resonate with the existing literature on GenAI, emphasizing the dual nature of such tools. On one hand, they offer efficiency and effectiveness, aligning with students' positive perceptions (Fauzi et al., 2023; Castillo et al., 2023). On the other hand, concerns about repetitive information and threats to academic integrity (Lubowitz, 2023) point towards the need for a nuanced understanding of the role of ChatGPT in academic settings.

The lack of significant differences in knowledge across demographic variables, such as gender, family system, living status, and academic year, suggests a relatively consistent understanding of ChatGPT among the surveyed students. This uniformity in knowledge implies that regardless of the differences in their background characteristics and experience with technology, students in the sample share similar perceptions about the tool's functionality and potential drawbacks. This result is consistent with mixed-method research conducted on private university instructors, who believed ChatGPT to be a user-friendly tool requiring no advanced technological skills. (Raza et al., 2023)

Moving further, the attitudes of students towards ChatGPT present a spectrum of perspectives, reflecting a balance between positivity and caution. A considerable number of participants (46%) express intentions to continue using ChatGPT for academic support, underlining its role as a valuable tool in their educational journey. This aligns with the tool's potential to enhance productivity and facilitate the completion of assignments and projects.

However, some students remain neutral or express reservations about the impact of ChatGPT on their academic performance. The concern about fairness in grading, expressed by a significant portion of participants (52.1%), raises ethical considerations regarding the use of AI-generated content in educational assessments. This sentiment is particularly pertinent in educational settings where fairness and equity are paramount as these tools can produce content that passes plagiarism detectors and appears to be written by a human, posing challenges in verifying authorship and the originality of work (Zohny et al., 2023).

The belief that ChatGPT has reduced stress related to meeting deadlines is a positive aspect highlighted by the respondents. This resonates with the potential of GenAI to streamline academic tasks and alleviate the pressures associated with time constraints. Nevertheless, concerns about its potential impact on critical thinking and creative abilities are noteworthy, indicating a need for a careful examination of the broader educational implications.

Like knowledge, the absence of significant differences in attitudes based on demographic factors suggests a uniform pattern of attitudes irrespective of gender, family system, living status, or academic year. This homogeneity in attitudes implies that the implications of ChatGPT are perceived similarly across diverse student groups. However, it must be noted that the sample although large consisted of urban students which may not be a fair measure of diversity. A study showed that the impact of ChatGPT in education is complicated by a digital divide, with urban students showing more engagement with the tool than their suburban counterparts (Thong et al., 2023).

The practices associated with ChatGPT usage among students depict diverse and evolving behaviors. While a portion of students (30.1%) acknowledge using ChatGPT as their first option for assigned tasks and academic support, others (35.9%) express concerns about its potential impact on procrastination. The direct incorporation of ChatGPT-generated content into written assignments without fear of plagiarism is a notable trend (29.7%), highlighting the tool's role in shaping academic tasks and outputs. Perhaps it's the ineffectiveness of plagiarism detection tools that prompt students to do so. Texts generated by ChatGPT have demonstrated the ability to circumvent traditional plagiarism detection methods. For instance, Ventayen (2019) conducted an experiment where ChatGPT was tasked with composing an essay drawing from existing

literature. Subsequently, the generated output was evaluated for originality utilizing Turnitin, a widely used plagiarism detection tool. Despite this scrutiny, the analysis yielded a notably low similarity index between the generated document and the referenced sources, thus failing to detect any instances of plagiarism.

Similarly, Khalil and Er (2020) conducted a study wherein ChatGPT was prompted to produce 50 essays based on diverse open-ended questions. Subsequently, half of these essays were analyzed using Turnitin, revealing an average similarity score of 13.72%. Meanwhile, the remaining essays underwent evaluation using iThenticate, another plagiarism detection software, yielding an average similarity score of 8.76%. These findings show the high level of originality exhibited by the ChatGPT-generated documents, as evidenced by their minimal resemblance to existing literature.

The KAP survey results shed light on students' reliance on ChatGPT for academic support, highlighting its influence on their workflow and information-seeking practices. This reliance may indicate a changing landscape in the way students approach and complete academic tasks, emphasizing the need for educators and institutions to adapt to these evolving practices.

Like knowledge and attitudes, the absence of significant differences in practices across demographic variables indicates consistent utilization patterns among students, regardless of their background characteristics. However, the varied responses regarding procrastination and direct incorporation into assignments suggest that individual experiences and motivations play a crucial role in shaping these practices.

Findings from a recent study done on the implications of ChatGPT in the educational context through a Pakistani perspective suggest that the tool is here to stay, and avoiding its use is not sustainable (Raza et al., 2023). The findings of this study have significant implications for educational institutions, policymakers, and educators seeking to integrate ChatGPT into the learning environment. The positive aspects of increased efficiency and stress reduction need to be balanced with the acknowledged limitations, such as concerns about academic integrity and potential impacts on critical thinking. Moreover, plagiarism detection tools must be worked upon to ensure the originality of the content created.

Strengths and Limitations

A notable strength of this study is that it is one of the first to evaluate the knowledge, attitude, and practices of GenAI—particularly ChatGPT—among undergraduate students in Pakistan. The sample size is large, which permits the generalizability of the findings. It is also diverse in its accounting for gender, academic year, living status, and family system. The findings of this research considering these variables are also considerable since the relationship between GenAI and the variables has not been studied previously.

There are also some limitations to this study. Firstly, this research is limited to one GenAI tool, which is ChatGPT. Future research should explore a wide array of tools such as Elicit, which works synonymously with a research assistant for crafting academic papers. Secondly, the sample entirely consisted of students living in an urban city, which adds an edge of accessibility that students from suburban and rural areas may not have. Future research should investigate variations regarding knowledge, attitudes, and practices of GenAI beyond the urban landscape. Moreover, longitudinal studies could provide insights into how attitudes and practices evolve as students' progress in their academic journeys. Future research can also delve deeper into specific academic disciplines to explore discipline-specific variations in students' perceptions and practices related to GenAI. Understanding how different fields view and adopt GenAI tools can inform tailored approaches to integration and highlight potential challenges unique to each discipline.

Implications

One noteworthy implication of this research is the need for targeted educational interventions to enhance student awareness of the ethical considerations associated with ChatGPT usage. Educational programs could include modules on responsible ChatGPT use, addressing issues related to plagiarism, academic integrity, and the ethical dimensions of relying on ChatGPT-generated content for academic tasks. Additionally, educators can play a pivotal role in fostering critical thinking skills alongside ChatGPT integration, ensuring that students develop a balanced approach to using these tools. Research has shown that integrating ChatGPT into education can enhance critical thinking skills (Vasconcelos and Santos, 2023;

Rusandi et al., 2023; Dyer et al., 2023; Tran & Tran, 2023). ChatGPT can serve as an "object to think with" in STEM education, fostering reflective and critical thinking (Vasconcelos and Santos, 2023). It can also help students develop AI literacy and digital literacy, promoting critical thinking (Rusandi et al., 2023; Dyer et al., 2023). Tran and Tran (2023) discuss that by promoting AI literacy, students can be better prepared for a digitally advanced future in an ethically sound way. Furthermore, a study exploring the use of the tool by postgraduate Arab students found it to help save time and effort, with participants perceiving its use to have benefits on their academic writing, language competency, and achievement. (Ahmed et al., 2023).

Conclusion

In conclusion, this study contributes to the understanding of how undergraduate students in Lahore, Pakistan, perceive and utilize Generative AI. The nuanced landscape of knowledge, attitudes, and practices reveals a complex interplay of positivity and caution, efficiency, and concern. The positive aspects of increased efficiency and stress reduction need to be balanced with the acknowledged limitations, such as concerns about academic integrity and potential impacts on critical thinking. Navigating the GenAI landscape in education requires a holistic approach that considers both the potential benefits and challenges, ensuring that these tools contribute positively to the learning experiences of students while addressing ethical and pedagogical considerations.

Author's Statement

First Author & Corresponding Author**: Dr. Saima Majeed was the principal investigator, conceived the study idea, designed the methodology, and supervised data collection, data analysis, and data interpretation. Contributed to writing manuscript and review for submission.**

Second Author: Dr. Afshi Yahya Khan, was a co-researcher, designed the study plan, and supervised data collection, data analysis, and data interpretation. Contributed to writing manuscript and review for submission.

The third fourth and fifth authors: worked as research assistants, and contributed to data collection, data analysis, and data interpretation. Contributed to writing manuscript and review for submission. Their order of authorship was given based on the percentage of work contributed.

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