

The Social Media Misinformation Loop: An Analysis of Consumption and Sharing Behaviors Among Medical Students

Misbah Ul Huda¹, Khusbu Thakur^{2,*}, Ishfaq Hussain Wani³

Abstract

Background: The contemporary information landscape is largely dominated by social media, which has emerged as a major source of information for medical students. This study aims to investigate the information consumption and sharing behaviors of medical students in Jammu and Kashmir, India, in the context of misinformation and its growing influence. **Methods:** A cross-sectional survey using a structured questionnaire was administered to 668 students from 13 medical colleges. The data analysis was done using descriptive statistics and non-parametric tests like the Kruskal–Wallis and Mann–Whitney U tests. **Results:** The results show that while 20.35% students consume entertainment and 16.33% news and current events, 15.63% consume educational resources. In contrast, when it comes to information sharing, 20.06% students share medical news and trends, while 22.71% students share educational content. Gender and age did not emerge as significant in misinformation consumption, but there was a marked difference between the misinformation-sharing behavior of students in the age groups 17–20 and 20–23 years. **Conclusion:** The findings highlight the imperative of digital literacy within medical education. A training that would enable students to evaluate the source of information properly will reduce misinformation and enhance their academic and professional development. It is also necessary to include such skills in the curriculum to make students responsible in the digital era of healthcare professionals.

Keywords: Misinformation, social media, information consumption, information sharing, healthcare

INTRODUCTION

The rapid growth of social media has led to a major shift in the way people consume and share information globally. More specifically, medical students from every age group and gender are increasingly active on these social platforms. They usually do not proactively search for the information, as social media allows them to consume information passively. The easy accessibility, real-time updates on medical breakthroughs, diverse content and academic exchanges have made social media a go-to place for those in the medical field. However, the increased user-participation and excessive sharing have led to information overload and the spread of unverified and false information. These have raised doubts regarding the reliability and accuracy of the content (Yap et al., 2023) [1]. Moreover, students do not verify all the information they see online or share with other people. This leads to reinforcement as well as wider circulation of misinformation. As a result, questions are being raised over the extent of social media usage and the kind of information shared on it (Bashir et al., 2021) [2].

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Over the last decade, it has become a major source of information for various fields. During the COVID-19 pandemic, social media played a significant role in connecting people, disseminating vital information, supporting education, and providing real-time updates to people worldwide. Yet, it simultaneously became a breeding ground for misinformation about the novel disease. Studies have also suggested the prevalence of health misinformation on social media. Moreover, its propagation has become a major public health concern at present since people mainly rely on social media for health information updates (Venkatraman et al., 2016) [3]. For instance, one recent study indicated that social media sites – like Facebook, YouTube, and Twitter – are filled with substantial amounts of misinformation about COVID-19 that has been spread through these media (Brennen et al., 2020) [4]. On top of it, low awareness, knowledge, and health literacy, along with a lack of ICT facilities and low trust in government/news media, amplified the misinformation (Balakrishnan et al., 2022) [5]. It has caused distrust among governments, researchers, and health professionals by spreading fake news and conspiracy theories due to its contribution to the pandemic, which has affected the lives of the general public (Rocha et al., 2023) [6]. Thus, growing concern among experts over the rise of social media as a popular health information source has been raised due to the prevalence of fraudulent claims and misleading material across the platform (Kim et al., 2022) [7]. This issue is more concerning for the medical students already in stressful academic environments; this pandemic has increased their challenges regarding health misinformation (Liu et al., 2022) [8].

The purpose of the paper is to report the results of an investigation conducted on information consumption and information sharing among medical students on different social media platforms amidst the misinformation ecosystem. Social media provides real-time access to information and is filled with abundant resources. Therefore, it becomes essential to focus on finding ways to enhance students' academic performance and learning of students while safeguarding them from misinformation. The vulnerability of students to misinformation on social media and the type of content they share and access has not been explored much. To address this, the present study focuses on the interplay between sharing and consumption behaviors in the realm of increasingly prevalent global health misinformation [9, 10].

OBJECTIVES OF THE STUDY

The study attempts to achieve the following objectives:

- To identify the types of information consumed and shared on social media.
- To examine how age and gender influence misinformation consumption on social media.
- To examine how age and gender influence misinformation sharing on social media.

MATERIALS AND METHODS

Data Collection

The population under study consisted of students at medical colleges in Jammu and Kashmir. The data were collected from 675 students using a non-probability convenience sampling method. All responses were individually checked, and a sample of 668 students was deemed valid for analysis.

The study was limited to students from 13 different governments, semi-governmental, as well as private medical colleges of Jammu and Kashmir.

Instrument

A questionnaire was designed using Google Forms and used to examine the information consumption and information sharing of medical students while navigating through misinformation on social media. The questionnaire consisted of descriptive, binary, multiple-choice, and Likert scale-based questions. This was done to allow the users to share their thoughts freely. Several questions were asked regarding their age, gender, types of information being consumed and shared on social media.

Procedure

The data was collected in October 2024. A survey was conducted using a structured questionnaire, which was circulated personally among the medical students. Subsequently, the reliability of the

questionnaire was assessed using Cronbach's Alpha, which yielded a value of 0.89, indicating excellent internal consistency. Following that, the data analysis was carried out using R software, SPSS, and Excel. Furthermore, various statistical techniques and inferential tests were also employed.

RESULTS

Gender-Wise and Age-Wise Distribution

A total of 668 respondents were included in the study. The gender distribution was nearly equal, with 50.60% males and 49.40% females (Table 1). The age-wise distribution showed that most participants belonged to the 20–23 years group (44.16%), followed by 17–20 years (30.24%), 23–26 years (22.60%), and 26–29 years (2.99%) (Table 2).

Table 1. Gender-wise distribution of respondents.

Age	Number	Percentage
17–20 years	202	30.24%
20–23 years	295	44.16%
23–26 years	151	22.60%
26–29 years	20	2.99%
Total	668	100%

Table 2. Age-wise distribution of respondents.

Gender	Number	Percentage
Female	330	49.40%
Male	338	50.60%
Grand Total	668	100%

Types of Information Students Consume and Share on Social Media

Information Consumption/Seeking

This study classifies information that students look for and share on social media, along with key trends in their digital behavior (Table 3).

Table 3. Types of information students consume on social media.

Content type	Number of selections	Percentage
News and current events	443	16.33%
Educational content	424	15.63%
Entertainment content	552	20.35%
Career advice and fellowships	157	5.79%
Peer networking and mentorship	85	3.13%
Creative content (artwork, photography, writing)	364	13.42%
Inspirational or motivational content	300	11.06%
Personal updates from family and friends	388	14.30%
Total	2713	100.00%

The most sought out information is Entertainment Content, at 20.35%, followed by News and Current Events at 16.33%, and Educational Content at 15.63%. This is then followed by Personal updates from family and friends at 14.30%, and Creative Content at 13.42%, showing a mix between academic, social, and leisure interests. Career Advice and Fellowship Opportunities at 5.79% and Peer Networking & Mentorship at 3.13% are the least in demand, showing that students rely on other sources for professional guidance.

Information Sharing

The most shared type of information is Educational Content, at 22.71%, indicating active student involvement in knowledge dissemination. Next are Medical News & Trends at 20.06% and

Entertainment Content at 18.76%, which reflect health awareness and a social bent. Inspirational or Motivational Content was also shared frequently, at 18.30%, presumably to encourage peers. Technology & Innovation had the least share at 8.16%, indicating this content is more passively consumed than actively distributed.

Analysis shows that entertainment and news are most in demand among students; however, they share more educational and medical content. It indicates that students mostly consume content for leisure purposes, but their activity is higher when it comes to academic or purely informative discussions (Table 4).

Table 4. Types of information students share on social media.

Content	Number of selections	Percentage
Medical news and trends	386	20.06%
Educational content	437	22.71%
Networking and professional development	231	12.01%
Entertainment content	361	18.76%
Inspirational or motivational content	352	18.30%
Technology and innovation	157	8.16%
Total	1924	100.00%

Analysis of Consumption of Misinformation on Social Media

Normality

The Anderson–Darling normality test was conducted to assess whether the data on consuming misinformation on social media follows a normal distribution. The result is given as follows:

- Test Statistic (A): 25.794.
- p-value: 2.2e-16.

The results indicated a significant deviation from normality, $A = 25.794$, $p < .001$. Therefore, non-parametric statistical methods should be used for further analysis (Figure 1).

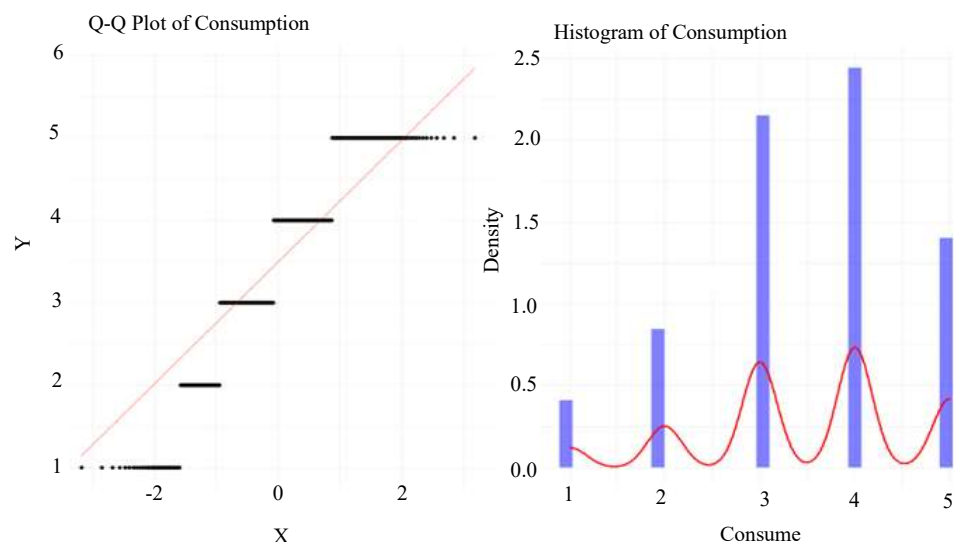


Figure 1. QQ plot and Histogram.

Analysis: Consuming Misinformation on Social Media Age-Wise

To analyze whether there is a significant difference in how different age groups consume misinformation on social media, a Kruskal–Wallis rank sum test was conducted. Since the Anderson–Darling test, Q–Q plot, and histogram indicated that the data do not follow a normal distribution, the Kruskal–Wallis test is an appropriate non-parametric alternative to ANOVA. This test determines

whether there are statistically significant differences in the median values of consuming misinformation across different age groups.

From Table 5, the p-value (0.8282) is much greater than 0.05. This implies that there is no significant difference in the misinformation consumption of students across various age groups.

Table 5. Kruskal–Wallis test.

Test statistic	Degree of freedom	p-value
0.88835	3	0.8282

A box plot is used to compare the consumption of misinformation on social media across different age groups. It provides information on the central tendency, variability, and presence of outliers for each age group. We can visually check from the box plot whether there are significant differences across age groups and then confirm it through statistical tests.

Figure 2 reflects that the medians of all age groups seem quite consistent, indicating that different age groups have similar behaviors in terms of the consumption of misinformation on social media. Since the IQR for each group was relatively similar, this indicates that the spread was consistent across them. In each age category, several outliers indicate that some people show very different behaviors from the rest in the consumption of misinformation.

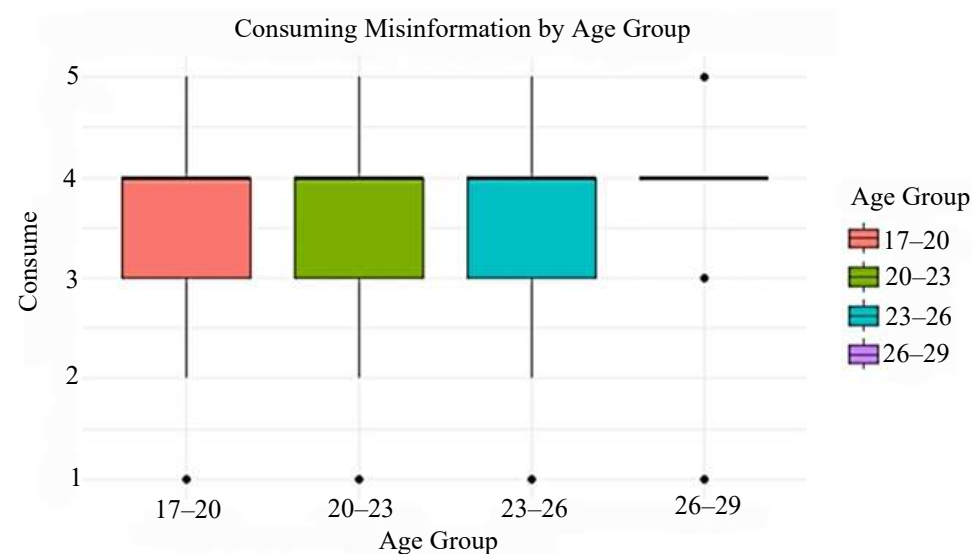


Figure 2. Box plot.

Since the Kruskal–Wallis test has a high p-value of 0.8282, there is no significant statistical difference in the consumption of misinformation across different age groups. This result agrees with the box plot above, showing that there is no clear separation in medians and spreads among age groups, further reinforcing the conclusion that age is not an influential factor in misinformation consumption behavior on social media. The box plot and Kruskal–Wallis test results all indicate that there is no significant difference in the consumption of misinformation among the different age groups. The similar median values and overlapping IQR reinforce the idea that age is not a major determinant of misinformation consumption behavior on social media.

Analysis of Consumption of Misinformation on Social Media, Gender-Wise

After analysing differences in consuming misinformation on social media across age groups using the Kruskal–Wallis test, we now examine gender-wise differences using the Mann–Whitney U test (Wilcon rank sum test).

Since the p-value (0.06792) is greater than 0.05, this indicates that there is no significant difference in how males and females consume misinformation on social media. Gender does not appear to be a key factor influencing misinformation consumption behavior on social media in this dataset (Table 6).

Table 6. Mann–Whitney U test.

Test statistic	Degree of freedom	p-value
60153	1	0.06792

Figure 3 shows that the median values for both males and females appear to be similar, suggesting that their overall tendencies in consuming misinformation on social media do not differ significantly. The male group has a slightly wider IQR, indicating more variation in responses compared to females. The female group has a more compact IQR, showing somewhat less variability in responses. Both groups contain outliers, indicating that some individuals exhibit significantly different misinformation consumption behavior compared to the majority.

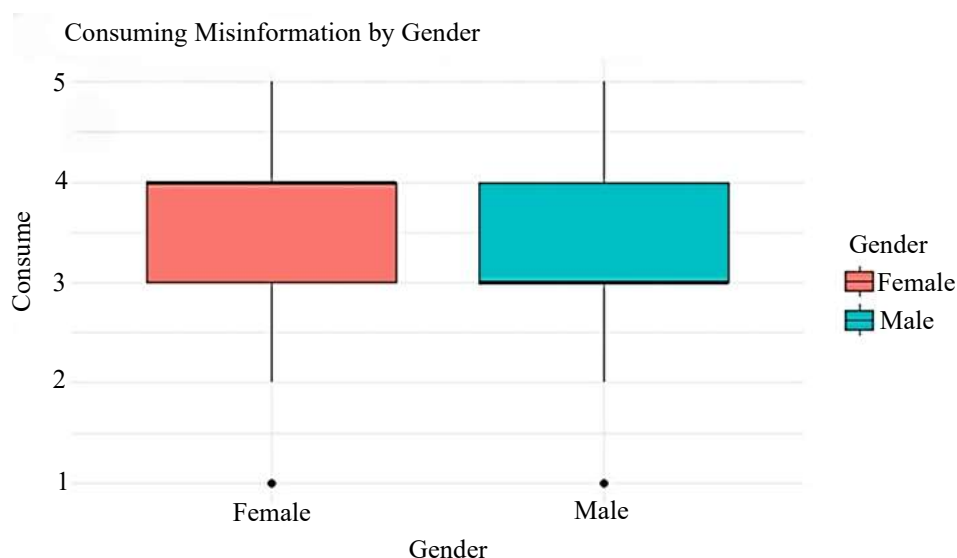


Figure 3. Box plot.

The Mann–Whitney U test yielded a high p-value (0.06792). This indicates that there is no statistically significant difference between males and females in the misinformation consumption on social media. This aligns with the box plot, as the medians are close, and there is considerable overlap in the distributions. The box plot and Mann–Whitney U test results consistently suggest that gender does not significantly influence misinformation consumption of medical students on social media.

Analysis: Sharing Misinformation on Social Media

Normality

The Anderson–Darling normality test was conducted to assess whether the data on sharing misinformation on social media follows a normal distribution. The result is given as follows:

- Test Statistic (A): 6.7898
- p-value: 2.2e-16

The results indicated a significant deviation from normality, $A = 6.7898$, $p < .001$.

The Anderson–Darling test, Q–Q plot, and histogram collectively indicate that the sharing of misinformation on social media data does not follow a normal distribution. Therefore, non-parametric statistical methods should be used for further analysis (Figure 4).

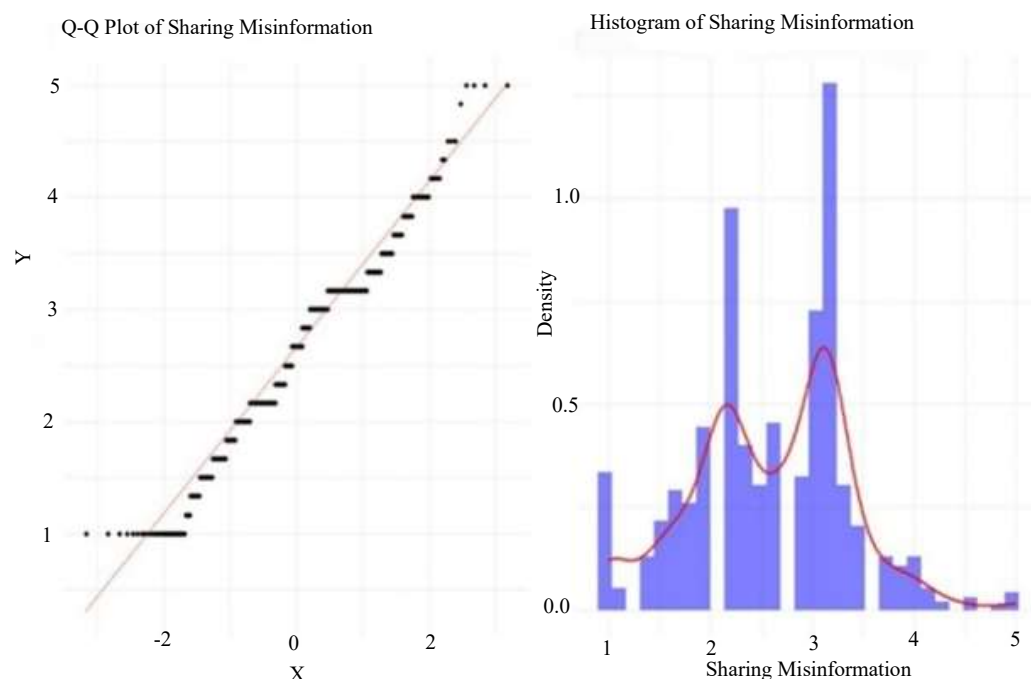


Figure 4. Q-Q plot and Histogram.

Analysis of Sharing Misinformation on Social Media Age-Wise

To analyze whether there is a significant difference in how different age groups share misinformation on social media, a Kruskal–Wallis rank sum test is conducted. Since the Anderson–Darling test, Q–Q plot, and histogram indicated that the data do not follow a normal distribution, the Kruskal–Wallis test is an appropriate non-parametric alternative to ANOVA. This test determines whether there are statistically significant differences in the median values of sharing misinformation across different age groups.

The result of the Kruskal–Wallis test is given as follows,

Since the p-value is less than the conventional significance level of 0.05, it indicates a statistically significant difference in the sharing of misinformation across different age groups. To investigate which age groups differ, a post-hoc test for pairwise comparisons should be conducted such as Dunn’s test with Bonferroni correction (Table 7).

Table 7. Kruskal–Wallis test.

Test statistic	Degree of Freedom	p-value
10.752	3	0.01314

Post hoc Test (Dunn’s Test)

Since the Kruskal–Wallis test showed that there was a statistically significant difference in the sharing of misinformation across the age groups, we next performed Dunn’s post-hoc test with the Bonferroni correction to determine which age groups actually differed.

Only the comparison between age groups 17–20 and 20–23 revealed a significant difference: $p_{adj} = 0.00689$, which is marked by **. Thus, 17–20-year-old subjects share misinformation differently from 20–23-year-old subjects. All other pairwise comparisons revealed insignificance, $p_{adj} > 0.05$, which is marked by “ns”. This means that different age groups do not differ noticeably regarding misinformation sharing on social media (Table 8).

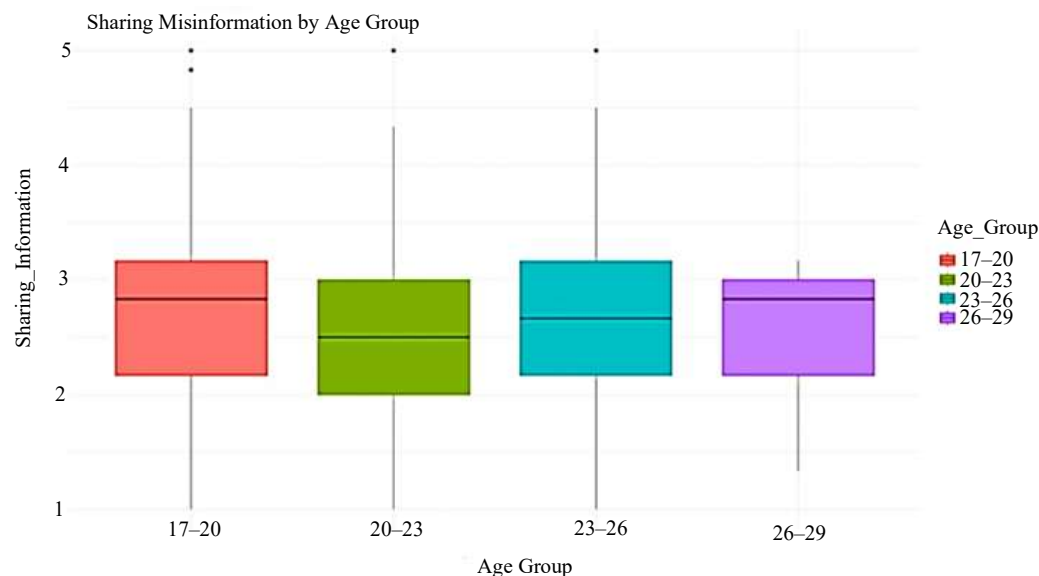
Table 8. Post hoc test (Dunn's test).

S. N.	Y	Group1	Group2	N1	N2	Statistic	P	P. Adj	P. Adj. Significant
1	Sharing misinformation	17–20	20–23	281	272	–3.25	0.00115	0.00689	**
2	Sharing misinformation	17–20	23–26	281	97	–0.83	0.406	1	ns
3	Sharing misinformation	17–20	26–29	281	9	–0.628	0.53	1	ns
4	Sharing misinformation	20–23	23–26	272	97	1.51	0.131	0.784	ns
5	Sharing misinformation	20–23	26–29	272	9	0.188	0.85	1	ns
6	Sharing misinformation	23–26	26–29	97	9	–0.33	0.742	1	ns

Box Plot

The box plot here is used to compare the sharing of misinformation on social media across different age groups.

The above box plot describes the distribution of sharing misinformation scores for each different age group: 17–20, 20–23, 23–26, and 26–29. All medians are not very different, which would imply that central tendencies are not very different. At the same time, the median for the 26–29 group seems to be a little higher than that of the others. The IQRs are similar, showing the middle 50% of the data for each age group. The 23–26 and 26–29 groups have slightly higher upper quartiles, indicating that these two groups may share more misinformation as compared to younger groups. There are a few outliers, especially for the 17–20 and 26–29 groups, which show that some people share misinformation significantly more or less compared to their peers (Figure 5).

**Figure 5.** Box plot.

From the box plot visualisation combined with the Kruskal–Wallis test, one may infer that misinformation sharing is significantly different across groups. However, the only pairs of groups from this that were individually significantly different are the 17–20 and the 20–23 groups. This might again support the idea that people of the later teenage years differ in their online sharing compared with people from the early twenties, possibly due to differences in digital habits, privacy concerns, or engagement on social media platforms. While the other age groups showed no significant differences, further research could explore why this shift occurs between the 17–20 and 20–23 age ranges and whether external factors, such as education level or social influences, contribute to these variations.

Analysis Sharing Misinformation on Social Media Gender-Wise

After analysing differences in sharing misinformation on social media across age groups using the Kruskal–Wallis test, we now examine gender-wise differences using the Mann–Whitney U test (also known as the Wilcoxon rank sum test).

The null and alternative hypotheses to test whether significant differences in the way individuals of different gender groups share misinformation on social media are given as follows,

The result of the Mann–Whitney U test is given as follows,

Since the p-value (0.4013) is much greater than 0.05, it indicates that there is no significant difference in how males and females share misinformation on social media. Gender does not appear to be a key factor influencing misinformation-sharing behavior on social media in this dataset (Table 9)

Table 9. Mann–Whitney U test.

Test statistic	Degree of freedom	p-value
57583	1	0.4013

Box Plot

The median sharing information score is nearly identical for both genders, indicating no clear difference between males and females. The interquartile ranges (IQRs) for both genders are similar. Outliers are present in both groups, indicating that a few individuals share misinformation significantly more or less than their peers (Figure 6).

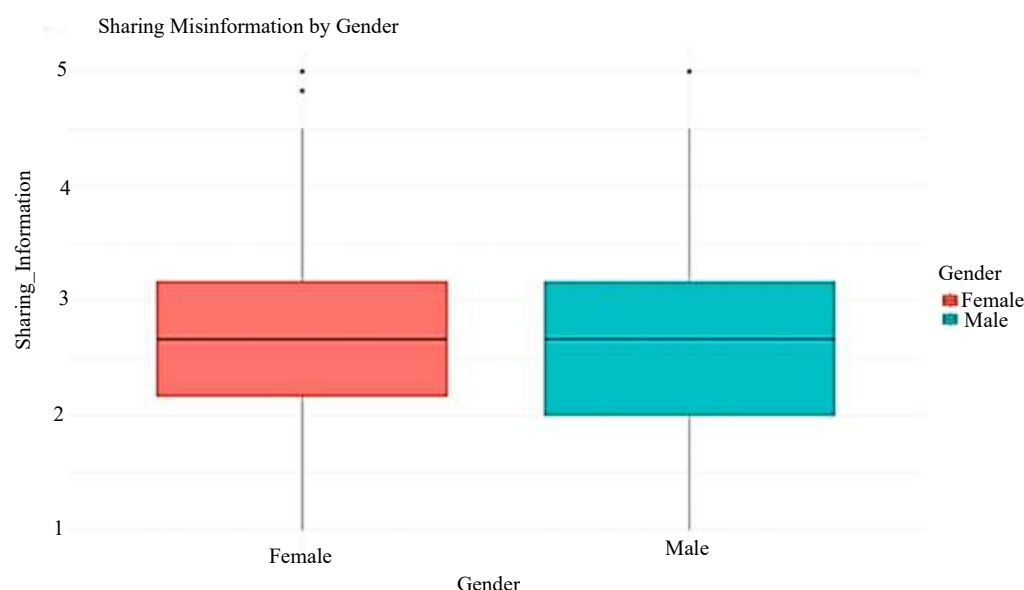


Figure 6. Box plot.

The combination of the box plot visualisation and the Mann–Whitney U test suggests that there is no significant difference in sharing misinformation behavior between males and females. The box plot shows a similar median and interquartile range for both genders, indicating comparable distributions. This goes to imply that gender is not a significant determinant of how individuals share misinformation. The similarity in how males and females share could be due to the habits related to common digital lifestyles, similar online platforms, or equal exposure to social and informational networks. Other factors that may explain differences in sharing better could be personality traits, cultural influences, or specific digital media use practices; these are further avenues for research.

CONCLUSION

This paper investigated the information consumption and information sharing of medical students on social media in an era of misinformation. The findings revealed an interesting contrast between what students consume and what they choose to share online. Their daily information consumption was dominated by entertainment content and news. On the contrary, students prefer sharing educational

content and medical information. This suggests that while the primary reason for engaging with social media is leisure, their sharing behavior is driven by the desire to maintain a productive and credible online presence. Sharing medical content may also serve as a way to align with their professional identity, even if their information-seeking habits are influenced by entertainment content. More importantly, the findings also showed that gender or age does not impact the consumption of misinformation significantly, whereas sharing behaviors slightly vary across some age groups, particularly the younger versus the slightly older students.

Results highlight developing in medical students a core set of digital literacy skills that would enable them to use online information more knowledgeably. This is important, considering the fact that their ability to sift reliable information from misinformation can make all the difference, as they are professionals in a field where one mistake can cost a life. Hence, there is a need to integrate social media into their curriculum, hold digital literacy workshops more often, and develop critical thinking skills amongst these students. By doing so, medical institutions can help in mitigating the risks associated with misinformation while harnessing the numerous benefits that social media offers.

Conflict of Interest

No conflict of interest.

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