Perception and attitude of nursing students toward e-learning

Jyotishman Mukhopadhyay[1], Sughandha Garg[2], Justin V Sebastian[3], Kiran Mini Ravi[4], Debayan Mallik[5]

[1]Professor, [5]Associate Professor, Department of Community Medicine, [2]Associate Professor, Department of Pharmacology, Jagannath Gupta Institute of Medical Sciences, [3]Associate Professor, [4]Tutor, Department of Nursing Sciences, Jagannath Gupta Institute of Nursing Sciences, Kolkata, West Bengal, India

ABSTRACT

Background: Information technology (IT) has undeniably eased out online teaching in days of social isolation. The sudden closure of institutions during the COVID-19 pandemic brought a halt in academics; later resumed through the inception of e-learning. Pandemics can neither be forecast nor overruled. Striding through this trying trend, it was thought prudent to determine nursing students' attitude toward acceptance and practice of e-learning. **Aims and Objectives:** Striding through this trying trend, it was thought prudent to determine nursing students' attitude toward acceptance and practice of e-learning. **Materials and Methods:** A descriptive cross-sectional study was conducted among 144 randomly selected nursing students of a Nursing College in Kolkata during August–October 2022. A self-administered structured questionnaire with demographic details incorporating a standard scale admeasuring attitude of students was used. Data were analyzed and validated statistically. **Results:** The majority used mobile set and cellular data as data-source (95 and 99%, respectively). Advantages of e-learning were screenshot of slides (96%), home-stay (94%), and reduced cost of hostel/transport (84%). Disadvantages included internet problems (83%) and inadequate bedside training (74%). Domain means for perceived usefulness, e-learning versus conventional learning, intention to adapt, ease of learning, and learning stresses were more than scale means reverberating higher acceptability. About 62.5% exhibited a favorable attitude toward e-learning. Family income, age, origin, and past experience were significantly associated with domains of e-learning; of which "Intent to get accustomed" was relevant. All domains related to e-learning found having significant positive correlation with each other indicating the strong value of e-learning among participants. **Conclusion:** As an alternative during the pandemic, 62.5% of prospective nurses showed a positive attitude toward e-learning. It is recommended that e-learning be made student-friendly through IT training making it a vital option for teaching-learning during catastrophic challenge.

Key words: E-learning; Mixed learning; Nursing students; Perception of e-learning

INTRODUCTION

COVID-19 pandemic has swept past the world still continuing in subjacent proportions in certain places around the corner. This has facilitated the reopening of schools, colleges, and educational institutions at present. During the lockdown and subsequent days, online classes and e-learning became commonly practiced methods in most of the educational institutions.[1] Closure of the institutions affected more than 1.5 billion students around the globe.[2]

Initially, students were intersected with challenges of gadgets, net-link, and technological glitches due to many social, economical, and ancillary factors. Acceptability was fraught with a lack of student-teacher interaction, social isolation, and want of classroom bonhomie.[3] However, once started, the learning continued and the difficulties were resolved ensuring ease of use, flexibility, and better control over technological hitches. Nursing students of Jagannath Gupta Institute of Nursing Science (JINS) hailing from diverse strata of society expected to have

Address for Correspondence:
Dr. Debayan Mallik, Associate Professor, Department of Community Medicine, Jagannath Gupta Institute of Medical Science and Hospital, Kolkata, West Bengal, India. **Mobile:** +91-9051424242. **E-mail:** dr.debayanmallik@gmail.com

experienced these hurdles while undertaking virtual theory, clinical, and practical lessons. The recurrence of calamities could neither be forecast, nor such a possibility be absolutely ignored.

Aims and objectives

Keeping such an odd in mind, it has been thought prudent to ascertain the perception and attitude of BSc nursing students of JINS toward the acceptance of e-learning in case of a likely event in the future.

MATERIALS AND METHODS

The study was carried out from August–October 2022 among 144 BSc nursing (2nd and 3rd year) students of JINS under the patronage of Jagannath Gupta Institute of Medical Science and Hospital administration. Ethical approval was obtained from the Institutional Ethics Committee.

The students were contacted initially to explain the purpose of the study. A relevant self-administered questionnaire was arranged after scrutinizing available literature and integrating required adjustments due to local factors and issues. A pilot study was carried out among 30 randomly selected nursing students to ascertain the acceptability of the instrument questionnaire. The pilot survey revealed positive views about e-learning among 27 students (90%); on the basis of which the sample size was calculated to be 144 at a 95% confidence limit with a 5% margin of error. Only 2nd- and 3rd-year BSc nursing students were considered since they had to attend a considerable number of e-learning sessions during pandemic seasons. A nominal roll of 144 randomly selected consenting students along with their mobile number was prepared. Informed individual consents were taken following universal precautions for COVID-19.

The questionnaire had four sections, namely, part 1 included the variables related to socio-demographic attributes including age, family income,[4] year of study, place of origin, gadgets used in e-learning, source of the internet, and past experience on e-learning. Part 2 comprised the insight about e-learning including its various advantages and disadvantages.

Part 3 consisted of 05 point Likert scale revealing views about the effectiveness of e-learning {efficacy of e-learning versus conventional technique using Likert scale; strongly disagree (1) to strongly agree (5) in statement}.

Part 4 contained 05 point Likert scale admeasuring the attitude of the students to e-learning. The scale had five elements, namely, perceived effectiveness (12 variables),

intent to get accustomed (06 attributes), ease of learning (06 traits), and learning stresses (04 counts). The score ranged from strongly disagree – 1 to strongly agree – 5. The overall attitude toward e-learning was categorized as favorable/unfavorable by comparing the observed mean with the mean score of the five-point Likert scale.

Data were tabulated and organized for accuracy and completeness. Data were analyzed and interpreted using descriptive statistics, that is, frequency, mean, percentage, and standard deviation. Chi-square test was applied to assess the relationship in the qualitative frame like attitude toward e-learning with selected sociodemographic variables. Pearson correlation was used to determine the relationship among the six domains related to e-learning.

RESULTS

The study included 144 BSc nursing students pursuing study in 2nd and 3rd year largely (76%) from the age group of 19–21 years with the majority (97%) having accomplished higher secondary education mostly (28.4%) belonging to the group of families having monthly income of Rs. 6327–18,952 (Table 1 and Figure 1). The mean age of the respondents is 20.47 ± 1.4. About 63% hailed originally from rural areas, 95% used mobile phones as e-medium for internet, and only 24% stated to have prior experience in e-communication/video-conferencing/learning.

Table 2 and Figure 2 show the advantages stated by the students that incorporated comfort of home (94%), facilities for screenshot of important slides (96%), reduction in cost of hostel and time-saving (84% each), ability to stay home in pandemic (83%), interactive doubt clearance in e-platform (61%), remote access from other places (59%), and facility to record meeting (66%). The disadvantages included internet problems and technical issues (83% each), inadequate bedside training (74%), head and eye pain (67%), poor hands-on understanding (34%), no classroom socialization (65%), no interaction with patients (63%), and homebound poor learning (45%).

Scholars responded well about the e-learning while comparing with conventional methods of teaching (Table 3). Means varied from 3.4 to 3.8 in relation to innovativeness, development of soft skill, and social competencies having median of 4 with inter-quartile range of 1–2 depicting a polarization of statements toward agreement. Drawbacks such as inactiveness and "better than classroom teaching" variables recounted unfavorable response.

Table 1: Personal attributes of nursing students

Personal attributes (n=144)		No. (%)	Personal attributes (n=144)		No. (%)
Age	16-18	18 (12.5%)	Year of study	2nd year	73 (50.7%)
	19-21	109 (75.7%)		3rd year	71 (49.3%)
	22 and above	17 (11.8%)			
Religion	Hindu	137 (95.1%)	Origin	Rural	90 (62.5%)
	Muslim	6 (4.2)%		Urban	54 (37.5%)
	Others	1 (0.7%)	Gadgets used	Mobile	137 (95.1%)
Basic education	Higher sec	139 (96.5%)		Desktop	2 (1.4%)
	Above	5 (3.5%)		Laptop	4 (2.8%)
Monthly family income	<6,327	30 (20.8%)		Tab	1 (0.7%)
	6,327 – 18,952	41 (28.4%)	Internet source	Broad band	0 (0%)
	18,953 – 31,590	17 (11.8%)		Mobile data	142 (98.6%)
	31,591 – 47,265	17 (11.8%)		Wi-fi	2 (1.4%)
	47,266 – 63,281	21 (14.6%)		Others	0 (0%)
	63,281-1,26,360	12 (8.3%)	Past experience in e-learning	Yes	35 (24.3%)
	>1,26,360	6 (4.2%)		No	109 (75.7%)

Table 2: Advantages and disadvantages of e-learning

| Advantages (n=144)	Yes n (%)	No n (%)
Comfortable home environment	135 (93.8)	9 (6.2)
Helps to screenshot many beneficial slides	138 (95.8)	6 (4.2)
Reduced cost of hostel and transport	121 (84)	23 (16)
Time-saving	121 (84)	23 (16)
Ability to stay home in pandemic	120 (83.3)	24 (16.7)
Possible interactive doubt clearance	88 (61.1)	56 (38.9)
Remote access from other places	85 (59)	59 (41)
Facility to record meeting	95 (66)	49 (34)
Disadvantages (n=144)		
Technical issues with the internet	120 (83.3)	24 (16.7)
Internet problems	120 (83.3)	24 (16.7)
Inadequate for bedside/ward duties	106 (73.6)	38 (26.4)
Head and eye pain	97 (67.4)	47 (32.6)
Poor Practical and hands-on experiences	49 (34.0)	95 (6.0)
Reduced classroom socialization	94 (65.3)	50 (34.7)
No interaction with patients	91 (63.2)	53 (36.8)
Home-bound poor learning	65 (45.1)	79 (54.9)
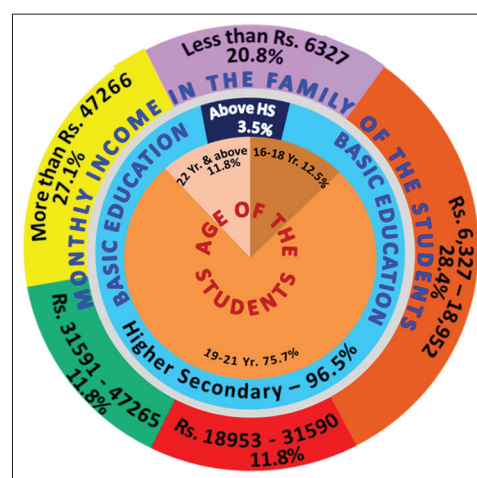
Figure 1: Certain socio-demographictraits of the students

Effectiveness of E-learning was conceived the most with a mean score of 3.9 and a median of 4 having 68–79.9% expression for agreement for access to learning materials, being informative facilitating making up for missed classes (Table 4). Augmenting research capability and wishing adoption of e-learning by universities were projected positively by around 62-64% with a mean of 3.6 and median of 4. Enhancing learner's engagement and reinforcement of knowledge were also important with mean and median of 3.5 and 4, respectively. About 48–51% expressed positive views on the understanding of the concept and not an absolute substitute to classroom teaching with a mean of 3.4.

Adaptation to e-learning was expressed favorably by 42–48% of students with a mean of 2.7–2.8 for the variables such as difficult to understand, automated process, disliking for e-learning, isolation from friends, and uninteresting respectively (Table 5); the means inclining to the left (disagreement) for all the non-affirmative recusant statements indicating positive intent to get accustomed. About 50% of the scholars even expressed future plan to participate in e-courses.

About 36–41% of the respondents favored e-learning being easier to adopt, simplicity in reading web page, ability to assimilate lecture contents, ease of acquiring information from internet, and inspiring interactive e-forum sessions (Table 6). However, 53.5% expressed difficulty in writing on notepad where-in such facilities were mostly non-existent with them.

Although 39–49.3% of students disagreed with all the recusant statements such as anxiety about their ability to participate in e-learning and difficulties arising out of slow or loss of internet link in such sessions thereby losing attendance and being forced by the teachers; yet around 28-35% exhibited agreement for the same statements (Table 7). The means ranged from 2.8 to 2.9 leaning toward the left indicating a large proportion of students in the disagreement mode for the stress-oriented issues.

Table 3: E-learning compared to conventional learning

Statements on e-learning (n=144)	SD*	DA*	N*	A*	SA*	Mean±SD	Median, IQR (q1-q4)
Innovative and encouraging	2	7	48	56	31	3.7±0.9	4, 2
Provides soft skills	1	11	26	87	19	3.77±0.8	4, 1
Offers social competencies	1	31	33	66	13	3.4±0.9	4, 1
Makes participant inactive	11	28	30	57	18	3.3±1.1	4, 2
Better than classroom	22	45	21	27	29	2.97±1.4	3, 2

*SD: Strongly disagree, DA: Disagree, N: No comment, A: Agree, SA: Strongly agree, IQR: Inter-quartile range

Table 4: Perceived effectiveness of e-learning

Effectiveness (n=144)	SD*	DA*	N*	A*	SA*	Mean±SD	Median, IQR (q1-q4)
Improves access to learning material	0	22	22	74	26	3.9±0.9	4, 1
Informative	1	6	39	74	24	3.9±0.8	4, 1
Helps to catch up on missed lectures	2	10	17	82	33	3.9±0.9	4, 0
Increases project/research capability	1	22	29	71	21	3.6±0.9	4, 1
Universities should adopt e-learning (hybrid method)	12	14	29	56	33	3.6±0.9	4, 1
Increases learner's engagement	0	25	39	58	22	3.5±0.95	4, 1
Helps to reinforce knowledge	1	25	35	68	15	3.5±0.9	4, 1
Enhances understanding of concept	1	29	45	54	15	3.4±0.9	3, 1
Not an absolute substitute for classroom teaching	1	28	42	59	14	3.4±0.9	4, 1
Improves teacher- students interaction	9	50	27	42	16	3.1±1.1	3, 2

*SD: Strongly disagree, DA: Disagree, N: No comment, A: Agree, SA: Strongly agree, IQR: Inter-quartile range

Table 5: Intent to get accustomed

Attributes to adapt (n=144)	SD	DA	N	A	SA	Mean±SD	Median, IQR (q1-q4)
E-learning makes me uncomfortable because I do not understand it	18	42	37	41	6	2.8±1.1	3, 2
Very automated process of learning	18	51	41	25	9	2.7±1.1	3, 1
I dislike the idea of using E-learning	17	52	41	25	9	2.7±1.1	3, 1
Not in favor of e-learning as it leads to isolation from friends	16	53	41	25	9	2.7±1.1	3, 1
E-learning doesn't interest me	15	50	41	29	9	2.8±1.1	3, 2
I plan to participate in future e-courses	2	18	52	44	28	3.5±1.0	3, 1

*SD: Strongly disagree, DA: Disagree, N: No comment, A: Agree, SA: Strongly agree, IQR: Inter-quartile range
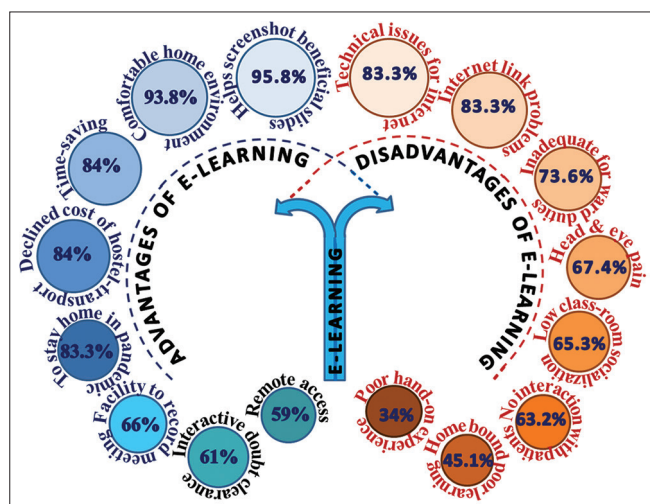

Figure 2: Sketches of advantages and disadvantages of e-learning

Overall, 62.5% of students expressed a positive and favorable attitude toward e-learning with unconditional acceptance (Table 8). Certain sociodemographic traits such as monthly family income, age, origin, and experience for e-learning of students are found significantly associated with the domains of e-learning; of which association with "Intent to get accustomed" was highly relevant with all the sociodemographic factors (Table 9). Students from families with per capita monthly income in the range of Rs. 6327–18,952 belonging to the age group of 19–21 years having urban background are observed proportionately higher in the demonstrated association.

All the domains related to e-learning including perceived effectiveness, comparison to conventional learning, intent to get accustomed, ease of learning, and learning stresses are found having significant positive correlation with each other indicating the strong value of e-learning among the participants (Table 10).

DISCUSSION

The unprecedented shutting down of the academic institutions due to the pandemic caused the educational sector to adopt different options to overcome the barriers to conducting regular teaching-training activities caused by the lockdown. E-learning came out to be a novel approach

for dispensing education in the era of social isolation. The nursing education was also customized in a similar way and students were made to follow an e-learning procedure. This study tries to ascertain the acceptance of e-learning among the 2nd and 3rd year of BSc. female nursing students with a mean age of 20.4 years based on their experience of online education during the pandemic having similarity with the study among medical students in the recent past.[5]

Mobile phones offered a favorite e-learning gadget due to many advantages including portability and easy operability. The same was used by 95% subjects in the present intent, although a similar study in India reported a preference for mobiles by only 50% of students.[6] About 98% students of present study used cellular data pack for the internet link similar to the findings of a study in Nepal.[7] Practices of e-learning have been scarce in most of the countries in pre-pandemic days;[8] however, around 25% of respondents

confirmed exposure to e-learning while undertaking online distal training for higher academic courses after they completed the basic education.

Comfort of home staying (94%), screenshot of beneficial slides (96%), reduction in hostel charges/transport costs and commuting time (84%), remote access (59%), and interactive doubt clearance (61%) observed in the present work are similar to the findings of the studies of recent past.[9,10] When teaching course is available online in their entirety, distance can never pose a major issue in attaining education even without a physical presence in the institute.[10]

The disadvantages included internet problems and technical issues (83% each), followed by inadequate bedside training (74%) and no interaction with patients (63%) that conform to the annotation of other studies in the past.[7,11] Lack of skill in Information Technology

Table 6: Ease of learning

Ease of learning (statements) (n=144)	SD	DA	N	A	SA	Mean±SD	Median, IQR (q1-q4)
E-learning is difficult to adopt than library studies	12	47	43	36	6	2.85±1.0	3, 2
Can't read lectures notes on web-pages	12	40	35	48	9	3.0±1.1	3, 2
Can't assimilate content through web	12	40	35	48	9	3.0±1.1	3, 2
Difficult to acquire any significant information from internet	11	48	42	37	6	2.85±1.0	3, 2
Difficult to express thoughts by writing in notepad	7	22	38	68	9	3.4±1.0	4, 1
Interaction in E-forum is interesting	2	19	65	46	12	3.3±0.9	3, 1

*SD: Strongly disagree, DA: Disagree, N: No comment, A: Agree, SA: Strongly agree, IQR: Inter-quartile range

Table 7: Learning stresses

Learning stresses (statements) (n=144)	SD	DA	N	A	SA	Mean±SD	IQR, Median (q1-q4)
Feel anxious about my ability to use e-learning effectively	27	29	37	31	20	2.9±1.3	2, 3
Slow internet connections stress me	28	27	39	27	23	2.9±1.3	1, 3
I feel forced by teachers to use e-learning for my learning activities	13	58	33	28	12	2.8±1.1	2, 3
Lose attendance due to de-link in net for power cuts	26	30	37	31	20	2.9±1.3	2, 3

*SD: Strongly disagree, DA: Disagree, N: No comment, A: Agree, SA: Strongly agree, IQR: Inter-quartile range

Table 8: Attitude toward e-learning

Characteristic	Favorable and desirable	Unfavorable and undesirable	Indecisive
Attitude toward e-learning	90 (62.5)	52 (36.1)	2 (1.4)

Table 9: Relation among e-learning and certain sociodemographic attributes

Socio-demographic factors	E-learning domains				
	Perceived effectiveness of e-learning	E-learning compared to conventional learning	Intent to get accustomed	Ease of learning	Learning stresses
Monthly family income	Chi-square-14.4 P=0.02	Chi-square-12.9 P=0.04	Chi-square-16.9 P=0.009	Chi-square-14.8 P=0.02	Chi-square-16.4 P=0.01
Age of student	Chi-square-8.2 P=0.02	Chi-square-6.9 P=0.03	Chi-square-11.6 P=0.002	Chi-square-6.8 P=0.03	Chi-square-6.4 P=0.04
Origin of student	Chi-square-4.72 P=0.03	Chi-square-5.2 P=0.02	Chi-square-8.03 P=0.004	Chi-square-6.2 P=0.01	Chi-square-4.8 P=0.03
Past experience for e-learning	Chi-square-10.02 P=0.001	Chi-square-8.2 P=0.004	Chi-square-18.5 P=0.00001	Chi-square-16.4, *P*=0.00004	Chi-square-5.5 P=0.018

Table 10: Relation among various e-learning domains

E-learning domains	E-Learning compared to conventional learning	Intent to get accustomed	Ease of learning	Learning stresses
Perceived effectiveness of e-learning	r=0.9631 P<0.001	r=0.8951 P<0.001	r=0.8823 P<0.001	r=0.9325 P<0.001
E-learning compared to conventional learning	------	r=0.9111 P<0.001	r=0.9072 P<0.001	r=0.9249 P<0.001
Intent to get accustomed	-------	-------	r=0.9627 P<0.001	r=0.9224 P<0.001
Ease of learning	------	-------	-------	r=0.8986 P<0.001

r: Correlational co-efficient

and stark disinclination to use e-learning methodologies among the academic governesses and scholars alluded to be the leading and foremost blockade in making the e-learning universally operational and successful in a study conducted in UK.[12]

In nursing education, teaching training in the presence of bed-borne real patients in a clinical milieu is undoubtedly essential and it is indeed, very difficult to provide such hands-on explicative training in distant mode. Virtual patients can help in simulating real bedside scenario and render practical preparatory ideas to the students for dealing with actual patients.[13] Technical, institutional, and student-related problems were found to be the core confront in the implementation of e-learning. Lack of internet access, infrastructure, and poor internet quality are the examples of such barriers that affect the e-learning.[14]

Scholars mostly responded favorably to the e-learning compared to the traditional learning with more than 50% agreeing on the creditable effectiveness of the method. The finding is not in conformity with the annotations in studies in the past conducted in South-East Asian countries.[6,15,16] The probable reason could be that the students got better accustomed to e-learning activities as the days went by after initial difficulties and while recalling, they considered e-learning the favored method – meeting the objectives virtually in the absence of conventional teaching. Rouleau et al., in a systematic review, noted e-learning as fairly and justifiably effective compared to the traditional teaching in terms of the academic context.[12]

In many studies conducted in India, students often preferred to use a combination of face-to-face teaching and e-learning education in a hybrid way.[6,17,18] Despite some affirmative responses about the usefulness of the traditional classroom teaching in the present intent, the majority wanted to take up the e-learning modes in the future along with the continuation of studies through the classroom learning as all of them presently do, thereby preferring a composite mode.[17]

The effectiveness of e-learning was recognized as the most pertinent in the present work with 62–80% resonating toward agreement with respect to online access to learning materials, making up for missed sessions, enhancing research pro-activity, and probable adoption of e-learning by universities which corroborate to the previous illustration in a recent Indian study.[19] In another study, appreciably almost half of the nursing scholars agreed with the importance of incorporating e-learning modalities into the undergraduate nursing curricula.[10] Adaptation to e-learning was reflected affirmatively by more than 42% of students in the present endeavor with 50% even expressing futuristic blaze to partake in worthy e-courses. Earlier studies documented cent-percent participants condescend to adapt e-learning with 85% consenting to enrolment in valued e-courses.[19]

In this study, 36–40% of students christened e-learning for being easy to adopt, effortless in interpreting web pages, easy cognoscibility of lecture contents, ease of attaining information from internet, and stimulating interactive sessions. It is not impertinent that there is a short of support from the institutions to perk up the scholars' aptitude and proficiency in finding feet in e-learning domain, that led the users to encounter complexities in the practice of e-learning. This has undeniably upshot many reasons to avert e-learning indicating a need for intensive training and guidance to enhance user skills toward digital literacy and e-learning technologies.[3] In this study, insufficient technical support and poor net connectivity (83% each) were major neutralizers conforming to the findings of other studies that pointed to such factors posing key challenges in fostering e-learning.[20,21]

The domain mean score in the current endeavor is highest for the perceived usefulness of e-learning (3.54) followed by e-learning compared to conventional learning (3.46) indicating higher acceptability among the students similar to the findings of past studies.[19] Domain means for intention to adapt, ease of learning, and learning stresses are 3.15, 3.2, and 2.9, respectively, reflecting positive outlook toward e-learning among the pupils as in line with the previous reporting (Figure 3).[19] Overall, 62.5% of subjects in the present

intent reflected a favorable attitude toward e-learning that is congruent with previous annotations,[16,22] more than double what was documented in a recent Indian study[6] and in the work among the medical students of Jordanian University.[14]

Sociodemographic attributes such as per capita monthly income, age, background and past experience of e-learning of the students are found significantly associated with all the domains of e-learning of which association of "Intent to get accustomed" was highly relevant in the present study. Researchers revealed that e-learners' acceptance does have a strong association with demographic elements such as regional belonging, socioeconomic standing, pre-course education level, age, gender, and disability status as divulged in the current intent;[23] although, lack of supportive home environment and distracting family issues further attenuate the motivation and acceptability among the scholars.[24] Geographical belonging, socioeconomic status, family background, and basic education are factors that are naturally related to each other and decisive in the acceptance of e-learning. Kizilcec et al., and Wladis et al., found e-learners from developed urban areas to be the most persistent acceptors, significantly better than those from less developed regions.[25,26] Prior experiences in e-learning were found to have a significant impact on the various perceptions of e-learning among students.[27] A study on the acceptance of e-learning found that perceived usefulness and perceived enjoyment had a direct effect on the intention to use e-learning.[27] Congruently, the "perceived effectiveness of e-learning" in the present work unfolded a strong positive correlation with "intention to get accustomed" and even other domains of e-learning, thereby convincingly affirming strong value of e-learning among the prospective nurses.

Limitations of the study

The study was conducted among nursing students of a solitary nursing college in Kolkata and may not be an exact representative of the total nursing students' community. The work was carried out in October 2022 with the ebbing pandemic, re-opening of academic institutions, and elimination of social restrictions; therefore, the recall possibly could not have been painted with a real taste of time. Notwithstanding, the endeavor divulged the minutiae of e-learning acceptance among prospective nurses which could be constructive for future strategy and research planning.

CONCLUSION

The results showed that perceived usefulness along with other domains of e-learning including certain sociodemographic attributes significantly and directly accentuated the "intention to get adapted to e-learning."
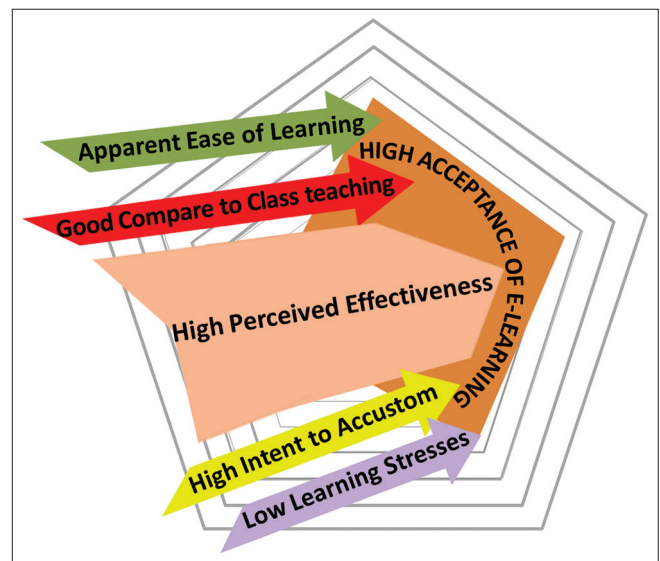

Figure 3: High acceptability and domains of e-learning

High motivation in the façade of a pandemic challenge perhaps could be strongly intuitive. The implication of this study appears important for both researchers and academic governors for prospective planning where-in a blended approach of teaching training may contemplate well-armored students to fight the bleak threats in the future.

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Orcid ID:
Dr. Jyotishman Mukhopadhyay - https://orcid.org/0000-0002-9470-9453
Dr. Sughandha Garg - https://orcid.org/0000-0001-5746-8374
Dr. Justin V Sebastian - https://orcid.org/0000-0001-7481-8217
Dr. Kiran Mini Ravi - https://orcid.org/0009-0003-0161-7213
Dr. Debayan Mallik - https://orcid.org/0000-0002-1429-5896