ORIGINAL ARTICLE

A study on challenges and perceptions of schoolteachers towards online classes during COVID 19 pandemic

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Abstract

Introduction: India, with its massive population, witnessed a surge in COVID-19 cases leading to a nationwide lockdown, profoundly affecting the education sector. The closure of schools for an extended period exacerbated the learning gap among students, prompting a swift transition to online education. This abrupt shift posed challenges for teachers unfamiliar with e-learning methods, necessitating a paradigm shift in teaching approaches. While virtual classrooms introduced logistical hurdles, they also spurred innovations like state-run education TV channels and doorstep education schemes. **Materials and Methods:** Ethical clearance was obtained, and a mixed-method survey was conducted among government and private school teachers in Western Tamil Nadu, using online platforms. The questionnaire covered teaching styles, online teaching difficulties, impact on physical well-being, gadget usage, and more. Data from 44 participants were analyzed using SPSS version 27, employing descriptive statistics, Chi-square tests, and Mann-Whitney U tests. **Results:** Of the 44 participants, 84.1% were females, and 61.4% were above 40 years. A majority (95.4%) taught in private schools, and 70.4% taught state board syllabus. While 72.7% spent 0-2 hours daily on online classes, 88.6% preferred live online classes. Network issues (75.7%) were the primary difficulty faced, and 56.8% felt the need for technology training. Health-wise, 47.7% spent 6-10 hours on gadgets, and 90.9% invested in gadgets for online classes. **Conclusion:** The study identified age-associated perceptions in schoolteachers regarding online teaching challenges but found no significant association between age and health issues due to increased screen time.

Keywords: School Teachers, COVID 19, Online Teaching

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Graphical Abstract

Title: A study on challenges and perceptions of schoolteachers towards online classes during COVID 19 pandemic.

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Background: India, with its massive population, witnessed a surge in COVID-19 cases leading to a nationwide lockdown, profoundly affecting the education sector. The closure of schools for an extended period exacerbated the learning gap among students, prompting a swift transition to online education. This abrupt shift posed challenges for teachers unfamiliar with e-learning methods, necessitating a paradigm shift in teaching approaches. While virtual classrooms introduced logistical hurdles, they also spurred innovations like state-run education TV channels and doorstep education schemes. The study focuses on the challenges faced by schoolteachers in Western Tamil Nadu during online teaching amid the COVID-19 pandemic.

Materials and methods: Ethical clearance was obtained, and a mixed-method survey was conducted among government and private school teachers in Western Tamil Nadu, using online platforms. The questionnaire covered teaching styles, online teaching difficulties, impact on physical well-being, gadget usage, and more. Data from 44 participants were analyzed using SPSS version 27, employing descriptive statistics, Chi-square tests, and Mann-Whitney U tests.

Table depicting various perceptions of online teaching among young vs middle aged schoolteachers

Perceptions	All teachers (N=44)	Young schoolteachers (Age less than 45 years) (n=17)	Middle aged schoolteachers (Age more than 45 years) (n=27)	P value (Using Mann Whitney U test)
		Median Score (out of 5)		
It's difficult to make students get involved in online teaching	4.0	3.0	4.0	0.006
Many students find it difficult to sit and concentrate	4.0	3.0	4.0	0.114
More spend more time in preparation for online class compared to traditional classroom teaching	3.0	3.0	3.0	0.007
Most students had an initial difficulty to cope up with online classes	4.0	4.0	4.0	0.006
Teachers can manage the online classes effectively nowadays	4.0	4.0	4.0	0.050
It's difficult to monitor each student while sitting online sessions	4.0	4.0	4.0	0.780
My workload has increased due to online teaching	4.5	3.0	4.0	0.001
The screen time for children has increased a lot nowadays	4.0	4.0	4.0	0.090
Online teaching program is not as effective as classroom teaching	4.0	3.0	4.0	0.018
Unable to supervise and guide the activities and assignments which students do	4.0	4.0	4.0	0.016
Facing difficulty in managing technology	4.0	4.0	4.0	0.050

Conclusion: The study concluded that perception factors like, "students faced initial difficulty to cope up with online teaching", "workload of teachers were increased upon implementation of online teaching practices", "online teaching program is less effective when compared to traditional classroom teaching" and "inability to supervise and guide the activities and assignments done by the students" were associated with the age of schoolteachers. However, there was no association with the age of the teachers and the health issues faced due to increased screen time like backache, eye strain, neck pain etc.

National Board of Examinations
Journal of Medical Sciences

Introduction

India, being the most populous country in the world, faced exponential growth in the number of COVID 19 cases during the pandemic. The government of India, announced a country wide lockdown for 68 days [1] in 4 phases, starting from March 2020 [1]. On 16th March 2020, the union government of India declared countrywide lockdown of schools [2]. It was a crucial time for the school education sector as the lockdown paralyzed the usual school going culture by confining students to their homes. This led to a widening of the learning gap among students. The country faced a major crisis in the educational sector as the schools remained closed beyond a year. This has impacted 99 percentage of country's student population [3].

Owing to the unprecedented closures, with a view to completing the academic year, the educational ministry made the most striking change overnight by converting traditional face-to-face teacher-student interaction by e-learning. The pandemic has made online education a norm in formal education across the country. However, this adaptation did not simply mean digitizing content, but required teachers to rethink their subjects and create dynamic materials that stimulated interest in the subject through distance learning. Teachers realized to keep students virtually engaged would need a different approach. They also realized that they would lose the personal connection with students that comes from face-to-face interaction. The virtual learning environment also presented clear logistical challenges. This methodical replacement was not an easy nut to crack through. It created unprecedented challenges in getting accustomed to the technologies [4].

On the other hand, the virtual classroom model has stimulated many other

innovations within the educational sector. Every state across the nation came out with innovative approaches in learning. In Tamil Nadu, approaches like state-run "Kalvi Tholaikatchi" (education TV channel), "Illam Thedi Kalvi"scheme (Education at doorsteps) etc were initiated in support of education continuity. Educational institutions reinvented various virtual teaching methods in record time.

School teachers are the custodians of the future generations, and act as mentors to nurture students' academic growth. COVID-19 has required states to urgently step-up in preparing schoolteachers to adapt to unfamiliar ways of teaching and new modes of delivery in which they had no prior experience [5]. However, many of these schoolteachers in India are hardly exposed to e-learning approaches prior to this pandemic nor were given any prior training. Teachers have to face various challenges and difficulties in performing their role efficiently according to the modern teaching practices which includes, usage of various online teaching platforms (like zoom, Microsoft teams), making teaching materials using power point, conducting exams online, taking attendance virtually, assessing the performance of students via online platforms etc. The current study investigated the challenges faced by the schoolteachers in Western Tamilnadu during delivering online teaching during the COVID 19 pandemic.

Methods

A quantitative and qualitative survey was conducted across government and private school teachers in Western Tamil Nadu between August and September 2020.

Owing to COVID restrictions, the data collection was made in the form of an online survey. The survey tool was created using google forms and disseminated via social platforms. A total of 43 responses were received. A questionnaire for teachers was developed consisting of 47 items covering a variety of subjects like, teaching styles, difficulties and challenges faced during teaching online, influence of online teaching on physical well-being, purchase and utilization of gadgets, etc. Data was entered into Microsoft excel and all the statistical analysis was performed using SPSS version 27. Categorical variables have been summarized in the form of frequencies and percentages and continuous variables summarized as median with interquartile range. Chi square test was used to check association for health issues faced due to increased screen time and the age of teacher. Results were expressed as crude and adjusted odds ratio (OR) with 95% confidence intervals. A p value < 0.05 was considered statistically significant.

Mann Whitney U test was used to check for statistically significant difference in various perception of online teaching among different age group.

Results

A total of 44 participants participated in the study. Table 1 depicts that, among all the participants, 37 (84.1%) of the participants were females and the rest 7 (15.9%) were males. 27 (61.4%) of the participants were more than 40 years of age and 17 (38.6%) were less than 40 years of age. 30 (69.8%) of the teachers were taking classes for elementary classes, 9 (20.9%)

were teaching secondary classes and the rest 4 (9.3%) were taking classes for both elementary and secondary classes. 42(95.4%) teachers were employed in private schools and 2 (4.6%) teachers were employed in government schools. 31 (70.4%) were teaching state board syllabus, 7 (15.9%) were teaching CBSE syllabus, 4 (9.1%) were teaching matriculation syllabus and 2 (4.6%)

were teaching ICSE syllabus. With respect to years of teaching experience, 22 (50%) were teaching for 10 years or less, 15 (34.1%) were teaching from 11-20 years and 7 (15.9%) were teaching for 21-30 years. 36 (81.8%) were aware of the technology and 8 (18.2%) had limited or no awareness about technology.

Table 1: Demographic profile of respondents (N=44)

Demographic profile	Sub classification	Number (n)	Proportion (%)
Gender	Male	7	15.9
	Female	37	84.1
Age group (in years)	Less than 40	17	38.6
	More than 40	27	61.4
Taking classes for	Elementary	30	69.8
	Secondary	9	20.9
	Both	4	9.3
Type of institution	Government	2	4.6
	Private	42	95.4
Syllabus	State board	31	70.4
	CBSE	7	15.9
	Matriculation	4	9.1
	ICSE	2	4.6
Years of teaching experience	Up to 10 years	22	50
	11-20 years	15	34.1
	21-30 years	7	15.9
Awareness about technology	Yes	36	81.8
	No	8	18.2

Table 2 depicts that, 37(84.1%) had no prior online teaching experience and 7 (15.9%) had prior online teaching experience. 31 (70.4%) were taking online classes for more than 6 months and 13 (29.6%) were taking online classes for less than 6 months. 32 (72.7%) of the teachers spend an average of 0-2 hours in online classes every day, 7 (15.9%) spend 2-4 hours every day and the rest 5 (11.4%) spend more

than 4 hours per day. When questioned about the preferred/comfortable method of e-learning, 33 (75%) said live online classes, 9 (20.5%) preferred sharing of teaching materials via WhatsApp and 2 (4.5%) preferred to send the recorded class via email. 39 (88.6%) conducted online classes from their home and 5 (11.4%) conducted online classes from office. Among the teachers who conducted online classes from home, 62.5%

had a dedicated/ favorable environment for conducting online classes and 37.5% did not have a proper workspace for conducting online classes from home. Of the 44 participants, 37 (86%) faced some or the other difficulty in teaching online and 7 (14%) did not face any difficulty. Among the 37 participants who faced difficulty, 75.7% faced network issues and 8.1% faced electricity fluctuations, 8.1% faced difficulty to grab students' attention and 8.1% faced difficulty in making teaching materials. 25 (56.8%) of the teachers felt the need for training to improve their knowledge about technology and 19 (43.2%) of the teachers didn't feel the need for training.

Table 2: Current practices and difficulties faced during online teaching during COVID 19

Practices and difficulties faced	Sub classification	Number (n)	Proportion (%)
Online teaching experience prior to COVID	Yes	7	15.9
	No	37	84.1
Since how long you are taking online classes	6 months or less	13	29.6
	More than 6 months	31	70.4
Duration of online session per day	0-2hours	32	72.7
	2-4hours	7	15.9
	More than 4 hours	5	11.4
Method of teaching used for e-learning	Live online classes	33	75.0
	Sharing via WhatsApp groups	9	20.5
	E-mailing recorded lectures	2	4.5
Place from which online class was taken	Home	39	88.6
	Office	5	11.4
Dedicated workspace at home (n=39)	Yes	24	61.5
	No	15	35.5
Favorable environment for teaching (n=24)	Yes	15	62.5
	No	9	37.5
Difficulties faced in teaching online	Yes	37	86.0
	No	6	14.0
If yes, difficulties faced* (n=37)	Network issues	28	75.7
	Electricity fluctuations	3	8.1
	Difficulty to grab students' attention	3	8.1
	Difficulty in making teaching materials	3	8.1
Requirement of training to improve online teaching skills	Yes	25	56.8
	No	19	43.2

Figure 1 depicts that, 21 (47.7%) of the teachers spend 6-10 hours on gadgets, 19 (43.2) spend 1-5 hours on gadgets and the rest 4 (10.1%) spend more than 10 hours on gadgets every day. 30 (68.2%) of the teachers spent up to 5 hours on gadgets for educational purposes and 14 (31.8%) spent more than 5 hours on gadgets for educational purposes.
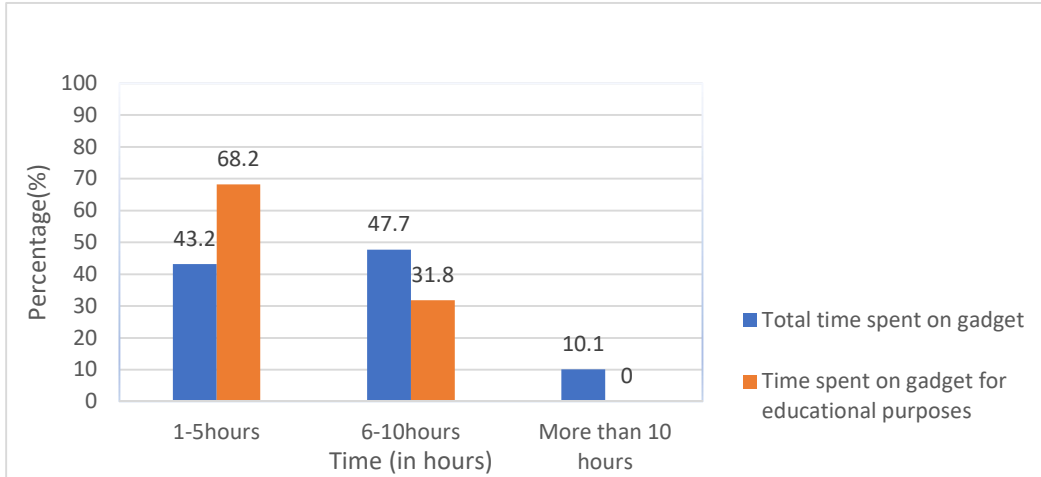
Figure 1. Time spent on Gadgets (N=44)

The data states that 40 (90.9%) of the teachers invested on gadgets for taking online classes and 4 (9.1%) of teachers did not invest on gadgets. Figure 2 depicts that, among the teachers who purchased gadgets, 33.7% invested in Wi-Fi/modem/internet connection, 25.8% invested in mobile/tablets, another 25.8% invested in laptop/desktop and 14.7% invested in furniture like chair/desk/table.
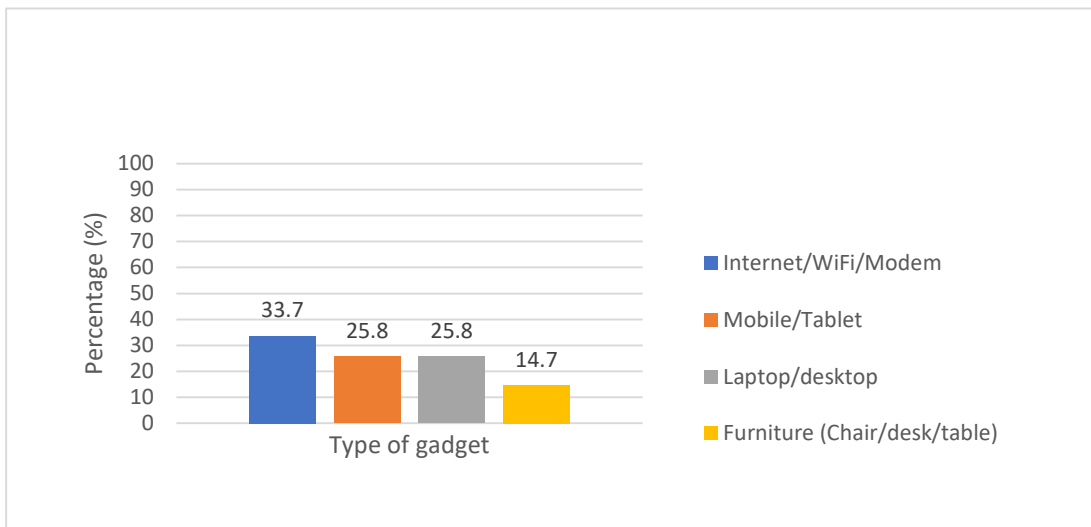

Figure 2. Gadgets purchased by schoolteachers for online teaching

Table 3 depicts the median score for various perceptions about online teaching experiences among young and middle-aged schoolteachers. On using Mann Whitney U test, there was a statistically significant difference in perceptions like, "most students faced initial difficulty to cope up with online teaching", "workload of teachers were

increased upon implementation of online teaching practices", "online teaching program is less effective when compared to traditional classroom teaching", "unable to supervise and guide the activities and assignments done by the students" among young schoolteachers and middle aged schoolteachers.

Table 3: Various perceptions of online teaching among young vs middle aged schoolteachers

Perceptions	All teachers (N=44)	Young schoolteachers (Age less than 40 years) (n=17)	Middle aged schoolteachers (Age more than 40 years) (n=27)	P value (Using Mann Whitney U test)
	Median Score (out of 5)			
It's difficult to make students get involved in online teaching	4.0	5.0	4.0	0.094
Many students find it difficult to sit and concentrate	4.0	5.0	4.0	0.164
Must spend more time in preparation for online class compared to traditional classroom teaching	5.0	5.0	5.0	0.887
Most students had an initial difficulty to cope up with online classes	4.5	5.0	4.0	**0.004**
Students can manage the online classes effectively nowadays	4.0	4.0	4.0	0.959
It's difficult to monitor each student while taking online sessions	5.0	5.0	5.0	0.786
My workload has increased due to online teaching	4.5	5.0	4.0	**0.041**
The screen time for children has increased a lot nowadays	5.0	5.0	5.0	0.090
Online teaching program is not as effective as classroom teaching	4.0	5.0	4.0	**0.018**
Unable to supervise and guide the activities and assignments which students do	4.0	5.0	4.0	**0.038**
Facing difficulty in managing technology	4.0	4.0	4.0	0.959

Table 4 depicts that the odds of having eye strain were 1.1 time more likely (OR 1.143; CI 0.335-3.904) among the middle-aged schoolteacher however the results were not statistically significant (p value 1.000). Other health issues like anxiety, backache, neck pain, fatigue, dry eye was not statistically significant with the age of schoolteachers.

Table 4: Association between health issues faced due to increased screen time with schoolteachers (N=45)

Health issues faced due to increased screen time*	All teachers		Teachers aged less than 40		Teachers aged more than 40		OR with IQR	P value
	Number (n=120)	Percentage	Number (n=49)	Percentage	Number (n=71)	Percentage		
Anxiety	38	31.7	15	30.6	23	32.4	0.767 (0.124-4.721)	0.774
Backache	28	23.3	12	24.5	16	22.5	0.606 (0.166-2.213	0.531
Eye strain	19	15.8	7	14.3	12	16.9	1.143 (0.335-3.904)	1.000
Neck pain	15	12.5	6	12.2	9	12.7	0.917 (0.256-3.286)	1.000
Fatigue	11	9.2	5	10.2	6	8.5	0.686 (0.172-2.733)	0.724
Dry eye	9	7.5	4	8.2	5	7.0	0.739 (0.168-3.254)	0.716

*Multiple responses

Discussion

The purpose of this study was to look at the challenges and perceptions faced by the elementary and secondary schoolteachers employed in both the public and private sectors. According to the findings, various health issues like anxiety, back pain and eyestrain were reported by teachers, but the results were not statistically significant with age. Perceptions on factors like supervising the students, workload of teachers, effectiveness of online teaching, students coping up online teaching strategy showed a statistically significant result with the age of the teachers (p value <0.05).

The present study highlighted that more than 3/4th of the schoolteachers had no prior online teaching experiences before

COVID 19 pandemic and had poor awareness about technology. More than 80% of the schoolteachers faced difficulty in teaching online and more than half of teachers felt the need for training on online teaching practices before commencement of online classes. All the teachers faced some or the other difficulty during online sessions and the most common one was reported as network/internet connectivity issues followed by difficulty in grabbing students' attention and difficulty in preparing the class materials etc.

About 90% had to buy additional gadgets required for the smooth conduct of online classes and the most common gadget purchased was mobile/tablets and laptop/desktop. Teachers adopted various methods to keep students active during the online sessions, the most common one was calling out names in the middle of class and asking questions followed by projecting MCQs in the middle of each section. About 70% of the teachers felt that the students were not as attentive during online classes in comparison to the traditional teaching method. Most of the teachers felt that the academic performance dropped drastically after introducing online teaching and more than 60% teachers felt that the attendance could not be assessed properly in online teaching classes. The most common method of assessing attendance was by downloading the students name list or giving attendance as per the logged in names. About 3/4th of them spent up to 2 hours every day on online teaching.

In the present study, the prevalence of eye strain was 15.8% among teachers and the prevalence was more in teachers aged more than 40 years. However, the results were not statistically significant (OR 1.143; p value 1.000). In a study done by *Pratyusha Ganne et al* in 2020(6) at India, prevalence of eye strain was reported to be higher among students taking online classes compared to the general public (50.6% vs 33.2%; $\chi^2 = 22.5$, df = 1, $p < .0001$). The overall anxiety level in schoolteachers was 31.7% and the prevalence was much higher among teachers aged more than 40 years of age. In a study done by Sowmini et al (2022) (7) in south India on psychological effects of schoolteachers upon reopening schools after COVID, the prevalence of anxiety was 45.2%. This contrasts with the present study, where the prevalence of anxiety was 31.7% among teachers while taking online classes. In a study done by *Tim Pressley et al* (2021) on Teachers stress and anxiety during COVID pandemic [8] it was reported that the stress level increased among teachers in an online teaching environment and the results were statistically significant (P value <0.001) . In the present study, the prevalence of backache was 23.3% (the prevalence was higher among teachers aged less than 40 years) and the prevalence of neck pain was 12.5%. However, the results were not statistically significant. Whereas in a study done by *Alka Pawalia et al* (2022) on the prevalence of musculoskeletal pain and discomfort due to online teaching and learning methods during lockdown in students and teachers [9], 60.8% of the participants experienced some form of musculoskeletal pain out of which 33.4% experienced backpain and 51.3% experiences neck pain.

In a study done by *Sowmini et al* (2022) (10) on perception of teachers towards COVID appropriate behavior for school children in south India, about 30% of the teachers disagreed with the idea of conducting online teaching classes. This result is in line with the present study, where majority of the teachers reported online teaching program as less effective when compared to the offline/ face-to-face teaching and the results showed statistically significant association with age of teachers (P value 0.018)

In a survey done by UNICEF India in 2020, [12] on the rapid assessment of learning during school closures in the context of COVID, 12% of the teachers consider a lack of e-skills .This was in contrast to the present study where 25 (56.8%) teachers, felt the need for conducting training to improve online teaching skills. In the same study, 7% of the teachers reported an additional expenditure as a barrier to online teaching. This contrasted with the present study where (40) 90.9% of the teachers reported to have invested additionally on gadgets for online teaching. The higher prevalence in the present study could be due to the variation in the study setting.

In a study done by *B.V. Rao et al* (2022) [11] on dry eye survey among schoolteachers and students during COVID 19 lockdown, the total screen time was 4-hours for 33.9% of the participants and 2-4 hours for 32.3% of the participants. Whereas in the present study, 47.2% of the teachers spent an average of 6-10 hours on gadgets and 43.2% spend an average of 1-5 hours on gadgets.

In the present study, 21(47.7%) of the teachers spend 6-10 hours on gadgets, 19(43.2%) spend 1-5 hours on gadgets and the rest 4(10.1%) spend more than 10 hours on gadgets every day. 30 (68.2%) of the teachers spent up to 5 hours on gadgets for educational purposes and 14 (31.8%) spent more than 5 hours on gadgets for educational purposes. In a study done by *B.V.Rao et al* (2022) (11) on dry eye survey among schoolteachers and students during COVID 19 lockdown, 60.7% of the participants faced dry eye and the symptom score was worse among the teachers. Whereas in the present study, the prevalence of dry eye among schoolteachers was 7.5%.

In a survey done by UNICEF India in 2020, [12] on the rapid assessment of learning during school closures in the context of COVID, 67% of the teachers perceive students to have fallen behind in their overall progress compared to where they should be pre-COVID if schools were open. This is in line with the perception of schoolteachers of the current study, where the teachers feel that "students find it difficult to cope up with online teaching", "online teaching program is not as effective as the classroom teaching" and the result is statistically significant with a p value of 0.004 and 0.018 respectively.

In a survey done by UNICEF India in 2020, [12] on the rapid assessment of learning during school closures in the context of COVID, top challenges faced by teachers are the inability to reach students (75 per cent) and lack of class discipline (51 per cent). Whereas perceptions in the present study were, "its difficult to make students get involved in online teaching" and "its difficult to monitor each student while taking online

classes". However, the results are not statistically significant.

Conclusion

The study concluded that perception factors like, "students faced initial difficulty to cope up with online teaching", "workload of teachers were increased upon implementation of online teaching practices", "online teaching program is less effective when compared to traditional classroom teaching" and "inability to supervise and guide the activities and assignments done by the students "were associated with the age of schoolteachers. However, there was no association with the age of the teachers and the health issues faced due to increased screen time like backache, eye strain, neck pain etc.

Since the current study was confined to Western Tamil Nadu, further studies should be conducted among schoolteachers across various states of India to gain a broader and deeper understanding of the online teaching and its effect on the educational system in a developing country like India.

Acknowledgement

We acknowledge all the schools and the participants for the cooperation provided to conduct the study.

Ethical Approval

Ethical clearance for the study was obtained from the Institutional Ethics Committee (IHEC/34/2020) before commencement of the study.

Conflict of interest

None declared.

Funding

Nil

Data availability

The data of the present study is available with the corresponding author and will be shared by the corresponding author on request.

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