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Research Article

Virtual Teaching Tool on Post-Disaster Adolescents' Quality of Life Affected by Flood in Uttarakhand

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A B S T R A C T

Introduction: Recurrent floods leave behind a terrible death toll, destroyed homes, destroyed food and crops, and a low quality of life. Thus, the purpose of this study was to evaluate how well the virtual teaching tool (VTT) improved the quality of life (QOL) of adolescents who had been affected by flooding in Uttarakhand.

Method: A quasi-experimental study, including 417 adolescents aged 10–19 years who were affected by the flood at Rudraprayag and Uttarkashi, Uttarakhand were recruited using a purposive sampling technique; out of which, 400 adolescents participated successfully.

Data were collected using self-structured sociodemographic variables and WHOQOL-BREF 26 items. VTT to improve QOL was administered after the pre-test.

Results: A notable proportion of adolescents were unemployed (65.75%) and came from families with a monthly income of less than INR 10,000 (77%). Despite these challenges, there was a significant improvement in their quality of life based on WHOQOL-BREF scores: post-test mean ± SD score was 93.932 ± 9.134, compared to the pre-test mean ± SD score of 86.775 ± 10.481, significant at $p < 0.05$. Quality of life was significantly associated with age, religion, education, employment status, and habitation.

Conclusion: Adolescents affected by the flood had a low quality of life in the pre-test, but the administration of VTT was found to be beneficial in improving QOL in the post-test.

Keywords: Adolescents, Flood, Quality of Life, Post-Disaster, Virtual Teaching Tool

Introduction

There are two types of floods: flash floods and inundation floods. While inundation floods occur gradually over several hours, flash floods happen abruptly and are typically caused by intense rainfall. Floods have the potential to seriously harm communities, including people, the environment, and property.[1,2] Many states in India, including Karnataka, Kerala, Hyderabad (Telangana state), Bihar, Chennai, Gujarat, Assam, and Uttarakhand, had flooding that affected those who lived there. Individuals can take action to lessen the damage caused by floods.[3]

In the wake of frequent flooding, victims experience a reduced quality of life (QOL); there is a significant loss of life, property, infrastructure, food, and shelter; and public

utilities are damaged.[4] It affects the victim's quality of life. There is proof that the victim's quality of life was low for several months or perhaps years following the flood. Consequently, the purpose of this quasi-experimental research was to evaluate the virtual teaching tool's (VTT) efficacy in raising the quality of life (QOL) of adolescents who had been affected by flooding in Uttarakhand.

Material and Method

From December 25, 2021, to February 15, 2022, adolescents from schools and villages in the Rudraprayag and Uttarkashi districts of Uttarakhand participated in a quasi-experimental study. Adolescents between the ages of 10 and 19 were recruited, and six villages and four schools were conveniently chosen. Rao software was used to determine the 10% dropout factor, which led to a sample size of 417 adolescents; out of which, 400 adolescents participated successfully.

Self-administered questionnaires in Hindi were used to gather data on sociodemographic characteristics (gender, age, religion, level of education attained, parent and adolescent occupation, monthly family income (INR), and housing); in addition, WHOQOL-BREF 26-item questionnaires were used, which included two standard questions: "How would you rate your QOL?" and "How satisfied are you with your health?".

The WHOQOL-BREF has four domains: environmental health (eight items), social relationships (three items), psychological health (six items), and physical health (seven items). To express their thoughts about their lives over the last two weeks, adolescents were asked to circle one of the numbers. In order to enhance the quality of life for adolescents, the researcher created a virtual video teaching tool (video) that focused on five areas: yoga for adolescents, exercise- Gark squat, lifestyle for adolescents, minimising stress, maintenance of the environment, and nutrition. Yoga includes Mangala Charan (Vandan) – Salutation, Greeva (Gardan) Chalan - Neck Movement, Skandh (Kandha) Sanchalan - Shoulder Movement, Kati Chalan - Waist Movement, Ghutna Sanchalan - Knee Movement, Tadasana - Mountain Pose, Vrikshasana - Tree Pose, Ardha Chakrasana - Half Wheel Pose, Trikonasana - Triangle Pose, Ardha Ushtrasana - Half Camel Pose, Uttanpadasana - Raised Leg Pose, Ardha Halasana - Half Plough Pose, Pawan Mukhtasana - Wind-Relieving Pose, and Pranayama - Breath Control or Breathing Exercises. Gark-squat reduce the weight of adolescent's thighs and abdomen and make the body more flexible. In this, like a regular squat, lower the hips and touch them with to heels. Keep feet firmly on the ground as adolescents descend and keep adolescents back completely straight. Hold this position for 30 seconds to 1 minute and then stand back up. It also includes lifestyle modification tips. Minimising stress includes staying away from people with negative thinking, enhancing positive thinking, and believing in self, Practicing yoga, meditating, and focusing on increasing your concentration; is a special initiative towards boosting self-confidence and Engaging in exercises like brisk walking, swimming, running, yoga, etc. Maintenance of the environment includes cleaning of rivers, ponds, and wells should be regularly from time to time. Any kind of dirt or waste should not be thrown into water sources. Sewage lines for drinking water and sanitation should be kept separate. Wet waste and dry waste should be disposed of in separate bins. Nutrition includes why is the right type of food in the right quantity important is explained with key nutrients like carbohydrates and fats, proteins, minerals, calcium and phosphorus, iron, iodine, vitamins, fibre and water. Six nursing department faculty members verified these questions and the VTT.

Any adolescents between the ages of 10 and 19 who were willing to take part and met the requirements for inclusion were chosen for the QOL assessment interview.

Adolescents were given questionnaires to complete in the pre-test, asking them to tick sociodemographic items and provide an adequate rating on the WHOQOL-BREF scale. Following the pre-test, VTT was given. Adolescents were told to adhere to the VTT-covered procedures without fail for the subsequent month. The researcher called adolescents to make sure they were daily exercising VTT. Following thirty days of instruction and practise with VTT, the researcher met with each of the adolescents who had been selected and gave them a WHOQOLBREF scale for post-test. The researcher acknowledges the importance of a control group in determining the effectiveness of an intervention. However, the chaotic post-disaster environment and limited available resources led to the decision not to include a control group in this study. Door-to-door visits and school visits were employed to obtain data.

The Human Research Ethics Committee (HREC) of Geetanjali University, Udaipur, Rajasthan, India, granted ethical clearance via letter no. GU/HREC/EC/2019/1674, dated January 1, 2019. All adolescent parents provided their informed written agreement; participation was entirely voluntary. The Gram Pradhan of the village and the school principals of the chosen village in Uttarkashi and Rudraprayag district, Uttarakhand, were formally consulted. The researchers presented the questionnaire in class during which they also provided an explanation of the study's objectives. In 12 to 18 minutes, every adolescent finished the questionnaire and returned it to the researchers. All of the information was absolutely kept confidential.

After being coded, the raw data were imported into Microsoft Excel. Microsoft Excel data were imported into SPSS version 23 for analysis. At first, descriptive statistics like mean, median, and mode were used to produce ordinal

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data, whereas frequency and percentage were used to calculate nominal data. Paired t-tests were used to compare the variables and a Chi-square test was used to determine statistical significance when calculating inferential statistics. Every test was run with a significance threshold of 5%. The 95% confidence interval and a statistical significance level of $p < 0.05$ were established by the researcher.

Results

Baseline Characteristics of Adolescents

Table 1 shows that of the 400 adolescents, 254 (63.5%) were between the ages of 16 and 19; 254 (63.5%) were male; 219 (54.75%) were educated to the 11th or 12th standard; 132 (33%) mothers of adolescents and 157 (39.25%) fathers of adolescents were educated up to 6th–10th standard; 392 (98%) adolescents were unemployed; 263 (65.75%) mothers of adolescents were unemployed or were housewives; 347 (86.75%) fathers of adolescents were doing part-time jobs; and 308 (77%) of the adolescents' monthly family income was equal to or less than INR 10,000. 392 (98%) adolescents were Hindu, and 394 (98.5%) lived in rural regions.

QOL of Adolescents: Distribution of WHOQOL-BREF Item-Wise Responses

As depicted in Table 2, during the pre-test, most (144, 36%) adolescents rated their QOL as good, whereas during the post-test, the number increased to 194 (48.5%). During the pre-test, most (157, 39.3%) adolescents rated their satisfaction level with their health as satisfied, whereas during the post-test, 178 (44.5%) adolescents rated it as very satisfied. In the pre-test, the majority of adolescents (117, 29.3%) ranked their perception of how much physical pain keeps them from accomplishing their tasks as moderate, but in the post-test, 196 (49%) adolescents rated not at all.

Table 1.Baseline Characteristics of Study Participants

S. No.	Characteristics	Frequency	Percentage
1.	**Age (years)**		
	10–13	20	5.00
	14–15	126	31.50
	16–19	254	63.50
2.	**Gender**		
	Male	166	41.50
	Female	234	58.50
	Transgender	0	0.00
3.	**Religion**		
	Hindu	392	98.00
	Muslim	7	1.75
	Christian	1	0.25
	Other	0	0.00
4.	**Adolescent's level of education**		
	Absence of formal education	4	1.00
	Up until the 5th grade	16	4.00
	6th–10th grade standards	161	40.25
	11th and 12th grade standards	219	54.75
5.	**Mother's educational background**		
	Absence of formal education	69	17.25
	Up until the 5th grade	112	28.00
	6th–10th grade	132	33.00
	11th and 12th grade	76	19.00
	Diploma or graduate	6	1.50
	Postgraduate level	5	1.25

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6.	**Father's educational background**		
	Absence of formal education	18	4.50
	Up until the 5th grade	67	16.75
	6th–10th grade	157	39.25
	11th and 12th grade standards	113	28.25
	Diploma or graduate	29	7.25
	Postgraduate level	16	4.00
7.	**Adolescent's employment status**		
	Working/ employed	8	2.00
	Not working/ employed	392	98.00
8.	**Mother's occupation**		
	Housemaker/ unemployed	263	65.75
	Part-time work	123	30.75
	Full-time position	14	3.50
9.	**Father's job status**		
	Jobless	25	6.25
	Part-time work	347	86.75
	Full-time work	28	7.00
10.	**Monthly income of the family (in INR)**		
	≤ 10,000	308	77.00
	10001–20,000	43	10.75
	20001–30,000	29	7.25
	> 30,000	20	5.00
11	**Residence**		
	Rural	394	98.50
	Urban	6	1.50

Table 2.Response Distribution for WHOQOL-BREF Elements

Items	**Pre-Post Test**	**Very Poor n (%)**	**Poor n (%)**	**Neither Poor Nor Good n (%)**	**Good n (%)**	**Very Good n (%)**	**Mean ± SD**
How would you rate your quality of life?	Pre-test	5 (1.3)	7 (1.8)	174 (43.5)	144 (36.0)	70 (17.5)	3.667 ± 0.826
	Post-test	1 (0.3)	4 (1.0)	78 (19.5)	194 (48.5)	123(30.8)	4.085 ± 0.747
How delighted are you with the state of your health?	**Pre-post test**	**Very dissatisfied**	**Dissatisfied**	**Neither satisfied nor dissatisfied**	**Satisfied**	**Very satisfied**	**Mean ± SD**
	Pre-test	11 (2.8)	12 (3.0)	96 (24.0)	157 (39.3)	124 (31.0)	3.927 ± 0.956
	Post-test	2 (0.5)	6 (1.5)	50 (12.5)	164 (41.0)	178 (44.5)	4.275 ± 0.775

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How much do you think that physical discomfort keeps you from completing your tasks?	**Pre-post test**	**Not at all**	**A little**	**A moderate amount**	**Very much**	**An extreme amount**	**Mean ± SD**
	Pre-test	96 (24.0)	104 (26.0)	117 (29.3)	67 (16.8)	16 (4.0)	2.507 ± 1.143
	Post-test	196 (49.0)	114 (28.5)	76 (19.0)	14 (3.5)	0 (0.0)	1.770 ± 0.876
To what extent do you require medical care to carry out your everyday activities?	Pre-test	133 (33.3)	88 (22.0)	99 (24.8)	55 (13.8)	25 (6.3)	2.377 ± 1.246
	Post-test	224 (56.0)	98 (24.5)	64 (16.0)	13 (3.3)	1 (0.3)	1.672 ± 0.875
How much do you enjoy life?	Pre-test	16 (4.0)	32 (8.0)	134 (33.5)	127 (31.8)	91 (22.8)	3.612 ± 1.046
	Post-test	1 (0.3)	15 (3.8)	124 (31.0)	132 (33.0)	128 (32.0)	3.927 ± 0.894
To what extent do you feel your life to be meaningful?	Pre-test	7 (1.8)	49 (12.3)	150 (37.5)	139 (34.8)	55 (13.8)	3.465 ± 0.935
	Post-test	0 (0.0)	7 (1.8)	102 (25.5)	191 (47.8)	100 (25.0)	3.960 ± 0.758
What is your level of concentration?	**Pre-post test**	**Not at all**	**A little**	**A moderate amount**	**Very much**	**Extremely**	**Mean ± SD**
	Pre-test	9 (2.3)	77 (19.3)	183 (45.8)	80 (20.0)	51 (12.8)	3.217 ± 0.973
	Post-test	0 (0.0)	13 (3.3)	109 (27.3)	176 (44.0)	102 (25.5)	3.917 ± 0.807
How protected do you feel in day-to-day living?	Pre-test	12 (3.0)	36 (9.0)	122 (30.5)	141 (35.3)	89 (22.3)	3.647 ± 1.017
	Post-test	1 (0.3)	6 (1.5)	92 (23.0)	164 (41.0)	137 (34.3)	4.075 ± 0.806
How healthy is your physical environment?	Pre-test	3 (0.8)	32 (8.0)	202 (50.5)	99 (24.8)	64 (16.0)	3.472 ± 0.881
	Post-test	0 (0.0)	1 (0.3)	78 (19.5)	186 (46.5)	135 (33.8)	4.137 ± 0.724
Do you have sufficient energy for daily tasks?	**Pre-post test**	**Not at all**	**A little**	**Moderately**	**Mostly**	**Completely**	**Mean ± SD**
	Pre-test	22 (5.5)	46 (11.5)	128 (32.0)	104 (26.0)	100 (25.0)	3.535 ± 1.145
	Post-test	2 (0.5)	25 (6.3)	99 (24.8)	131 (32.8)	143 (35.8)	3.970 ± 0.949
Are you able to accept your bodily appearance?	Pre-test	16 (4.0)	42 (10.5)	108 (27.0)	51 (12.8)	183 (45.8)	3.857 ± 1.221
	Post-test	0 (0.0)	29 (7.3)	84 (21.0)	83 (20.8)	204 (51.0)	4.155 ± 0.994

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Do you have adequate cash to cover your expenses?	Pre-test	45 (11.3)	83 (20.8)	192 (48.0)	38 (9.5)	42 (10.5)	2.872 ± 1.076
	Post-test	31 (7.8)	75 (18.8)	196 (49.0)	54 (13.5)	44 (11.0)	3.012 ± 1.036
How easy is it for you to get the knowledge you require for daily living?	Pre-test	14 (3.5)	74 (18.5)	218 (54.5)	72 (18.0)	22 (5.5)	3.035 ± 0.851
	Post-test	9 (2.3)	67 (16.8)	212 (53.0)	88 (22.0)	24 (6.0)	3.127 ± 0.838
To what extent do you have the opportunity for leisure activities?	Pre-test	30 (7.5)	108 (27.0)	183 (45.8)	42 (10.5)	37 (9.3)	2.870 ± 1.015
	Post-test	1 (0.3)	30 (7.5)	182 (45.5)	124 (31.0)	63 (15.8)	3.545 ± 0.854
What is your level of mobility?	**Pre-post test**	**Very poor**	**Poor**	**Neither poor nor good**	**Good**	**Very good**	**Mean ± SD**
	Pre-test	22 (5.5)	61 (15.3)	86 (21.5)	92 (23.0)	139 (34.8)	3.662 ± 1.247
	Post-test	0 (0.0)	21 (5.3)	82 (20.5)	118 (29.5)	179 (44.8)	4.137 ± 0.919
How happy are you with the way you slept?	**Pre-post test**	**Very dissatisfied**	**Dissatisfied**	**Neither satisfied nor dissatisfied**	**Satisfied**	**Very satisfied**	**Mean ± SD**
	Pre-test	25 (6.3)	27 (6.8)	71 (17.8)	161 (40.3)	116 (29.0)	3.790 ± 1.122
	Post-test	2 (0.5)	1 (0.3)	50 (12.5)	112 (28.0)	235 (58.8)	4.442 ± 0.757
How satisfied are you with your ability to perform your daily living activities?	Pre-test	5 (1.3)	30 (7.5)	96 (24.0)	196 (49.0)	73 (18.3)	3.755 ± 0.881
	Post-test	0 (0.0)	13 (3.3)	55 (13.8)	169 (42.3)	163 (40.8)	4.205 ± 0.796
How satisfied are you with your capacity for work?	Pre-test	7 (1.8)	22 (5.5)	54 (13.5)	211 (52.8)	106 (26.5)	3.967 ± 0.882
	Post-test	0 (0.0)	2 (0.5)	40 (10.0)	154 (38.5)	204 (51.0)	4.400 ± 0.686
How satisfied are you with yourself?	Pre-test	14 (3.5)	21 (5.3)	48 (12.0)	154 (38.5)	163 (40.8)	4.077 ± 1.024
	Post-test	0 (0.0)	5 (1.3)	37 (9.3)	131 (32.8)	227 (56.8)	4.450 ± 0.713
How comfortable are you with your interpersonal connections?	Pre-test	9 (2.3)	21 (5.3)	59 (14.8)	164 (41.0)	147 (36.8)	4.047 ± 0.963
	Post-test	0 (0.0)	3 (0.8)	34 (8.5)	141 (35.3)	222 (55.5)	4.455 ± 0.681
In what way is your sexual life fulfilling you?	Not applicable						

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What level of satisfaction do you have with your friends' support?	Pre-test	7 (1.8)	30 (7.5)	89 (22.3)	135 (33.8)	139 (34.8)	3.922 ± 0.1011
	Post-test	1 (0.3)	12 (3.0)	48 (12.0)	152 (38.0)	187 (46.8)	4.280 ± 0.808
How satisfied are you with the conditions of your living place?	Pre-test	10 (2.5)	28 (7.0)	72 (18.0)	115 (28.8)	175 (43.8)	4.042 ± 1.059
	Post-test	0 (0.0)	13 (3.3)	49 (12.3)	127 (31.8)	211 (52.8)	4.340 ± 0.816
How satisfied are you with your access to health services?	Pre-test	18 (4.5)	50 (12.5)	92 (23.0)	168 (42.0)	72 (18.0)	3.565 ± 1.062
	Post-test	0 (0.0)	16 (4.0)	74 (18.5)	176 (44.0)	134 (33.5)	4.070 ± 0.822
How pleased are you with your mode of transportation?	**Pre-post test**	**Very dissatisfied**	**Dissatisfied**	**Neither satisfied nor dissatisfied**	**Satisfied**	**Very satisfied**	**Mean ± SD**
	Pre-test	23 (5.8)	52 (13.0)	124 (31.0)	124 (31.0)	77 (19.3)	3.450 ± 1.113
	Post-test	0 (0.0)	17 (4.3)	78 (19.5)	173 (43.3)	132 (33.0)	4.050 ± 0.833
How frequently do you feel bad emotions like sorrow, hopelessness, anxiety, or depression?	**Pre-post test**	**Never**	**Seldom**	**Quite often**	**Very often**	**Always**	**Mean ± SD**
	Pre-test	26 (6.5)	244 (61.0)	75 (18.8)	41 (10.3)	14 (3.5)	2.432 ± 0.890
	Post-test	248 (62.0)	118 (29.5)	31 (7.8)	3 (0.8)	0 (0.0)	1.472 ± 0.671

The majority of adolescents (133, 33.3%) reported having no need for any medical treatment to function in their everyday lives during the pre-test, while 224 (56%) rated as having no need for any medical treatment during the post-test. During the pre-test, the majority of adolescents (134, 33.5%) rated how much they enjoy their life as a moderate amount, whereas during the post-test, 132 (33%) adolescents rated it as very much. During the pre-test, the majority of adolescents (150, 37.5%) rated to what extent they feel their life to be meaningful as a moderate amount, whereas in the post-test, 191 (47.8%) adolescents rated as very much.

In the pre-test, 183 (45.7%) adolescents gave a moderate rating for how well they could concentrate, but in the post-test, 176 (44%) adolescents gave a very high rating. Most adolescents (141, 35.3%) ranked how safe they feel in their daily lives as very much during the pre-test, whereas 164 (41%) rated the same on the post-test. The majority of the adolescents (202, 50.5%) ranked the level of health of their physical environment as moderate during the pre-test, whereas 186 (46.5%) evaluated it as very much during the post-test.

In the pre-test, 128 (32%) adolescents gave a moderate rating to the question of whether they have adequate energy for daily living; in the post-test, 143 (35.6%) adolescents gave a complete rating. The majority of the adolescents (192, 48%) ranked having enough money to meet their requirements as moderate during the pre-test, while 196 (49%) assessed the same on the post-test.

In the pre-test, 218 adolescents (54.5%) assessed their access to the knowledge they require for daily living as moderately available, while 212 adolescents (53%) scored the same in the post-test. The majority of adolescents (183, 45.8%) ranked their chance for leisure activities as moderate during the pre-test, while 182 (45.5%) assessed similarly during the post-test. In the pre-test, 139 adolescents (34.8%) assessed their ability to navigate as very good, while 179 adolescents (44.8%) rated the same in the post-test.

In the pre-test, 161 adolescents (40.3%) assessed their level of satisfaction with their sleep as satisfied, whereas 235 adolescents (58.8%) ranked their level of satisfaction with their sleep as very satisfied. The majority of adolescents (196, 49%) ranked their level of satisfaction with their

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capacity to carry out daily tasks as satisfied during the pre-test, whereas 169 (42.3%) rated the same during the post-test. In the pre-test, 211 teenagers (52.8%) expressed satisfaction with their ability to work, while 204 adolescents (51%), in the post-test, expressed extreme satisfaction.

The majority of adolescents (163, 40.8%) assessed their level of satisfaction with themselves as extremely satisfied during the pre-test, whereas 227 (56.8%) rated the same on the post-test. The majority of adolescents (164, 41%) ranked their level of satisfaction with their personal connections as pleased during the pre-test, but 222 (55.5%) rated it as extremely satisfied after the post-test. The majority of adolescents (139, 34.8%) ranked their level of satisfaction with the assistance they receive from their friends as extremely satisfied during the pre-test, whereas 187 (46.8%) rated the same on the post-test. The majority of the adolescents (175, 43.8%) ranked their level of satisfaction with their living conditions as extremely satisfied during the pre-test, whereas 211 (52.8%) assessed the same on the post-test.

In the pre-test, 168 (42%) adolescents assessed their level of satisfaction with their access to healthcare as satisfied, whereas 176 (44%) rated the same in the post-test. In the pre-test, 124 (31%) adolescents evaluated their level of satisfaction with their transportation as both satisfied and neither satisfied nor dissatisfied equally, while 173 (43.3%) adolescents scored as satisfied in the post-test. In the pre-test, 244 adolescents (61%) rated never, whereas 248 adolescents (62%) ranked seldom when asked how often they experience negative emotions such as sadness, worry, despair, and blue mood.

QOL of Adolescents: Domain-Wise Score

Data were computed domain-wise as per raw score as depicted in Table 3. A significant change was observed at p value < 0.05 level. The mean ± SD (4.085 ± 0.747) score of the post-test for adolescents rated their QOL was higher than that of the pre-test score (3.667 ± 0.826). The mean ± SD (4.275 ± 0.775) score of the post-test for adolescents' satisfaction with their health had increased as compared to the pre-test score (3.927 ± 0.956). The mean ± SD (24.597 ± 2.786) score of the post-test for the domain of physical health of adolescents was higher than that of the pre-test score (23.592 ± 3.634).

The mean ± SD (21.882 ± 2.805) score of the post-test for the domain of psychological health of adolescents had increased as compared to the pre-test score (20.662 ± 3.267). The mean ± SD (8.735 ± 1.248) score of the post-test for the domain of social relationships of adolescents was higher than that of the pre-test score (7.970 ± 1.621). The mean ± SD (30.357 ± 3.943) score of the post-test for the domain of environmental health of adolescents had increased as compared to the pre-test score (26.955 ± 4.574). The mean ± SD (93.932 ± 9.134) score of the post-test for the overall QOL of adolescents was higher than that of the pre-test score (86.775 ± 10.481). According to these results, there was a substantial improvement in the four domains, the two standardised questions, and the adolescent's overall quality of life following the intervention, all at p value < 0.05 level.

Association between Sociodemographic Factors and QOL

The association was considered significant at a p value of < 0.05 level as depicted in Table 4. A significant association of total QOL score was found with their age, religion, educational qualification, employment status as well as educational qualification of their mother and father, and habitat.

Table 3.QOL of Adolescents: Domain Wise Score

N = 400

WHOQOL-BREF (26) Items	Mean ± SD		p Value
	Pre-Test	Post-Test	
Q1: In what way would you assess your life's quality?	3.667 ± 0.826	4.085 ± 0.747	0.000
Q2: How delighted are you with your state of health?	3.927 ± 0.956	4.275 ± 0.775	0.000
DOM1: Physical well-being of body	23.592 ± 3.634	24.597 ± 2.786	0.000
DOM2: Psychological health	20.662 ± 3.267	21.882 ± 2.805	0.000
DOM3: Social relationship	7.970 ± 1.621	8.735 ± 1.248	0.000
DOM4: Environmental health	26.955 ± 4.574	30.357 ± 3.943	0.000
Total Quality of Life	86.775 ± 10.481	93.932 ± 9.134	0.000

*p is significant at the < 0.05 standard.
QOL: Quality of Life, DOM: Domain

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Table 4.Association of QOL with Sociodemographic Variables

N = 400

S. No.	Characteristics	WHOQOL-BREF-26 Item's Score													
		Q1		Q2		DOM1		DOM2		DOM3		DOM4		Overall	
		Chi-square	p Value	Chi-square	p Value	Chi-square	p Value	Chi-square	p Value	Chi-square	p Value	Chi-square	p Value	Chi-square	p Value
Age (years)															
1.	10–13 14–15 16–19	16.639	0.034	28.649	0.000	95.858	0.000	47.075	0.102	14.920	0.384	117.100	0.000	172.513	0.000
Gender															
2.	Male Female Transgender	2.297	0.681	31.010	0.000	22.622	0.308	31.577	0.025	6.594	0.472	39.171	0.061	53.171	0.506
Religion															
3.	Hindu Muslim Christian Other	6.650	0.575	21.758	0.005	33.732	0.747	97.256	0.000	53.253	0.000	90.907	0.001	141.667	0.016
Adolescent's level of education															
4.	Absence of formal education Up until the 5th grade 6th–10th grade standards 11th and 12th grade standards	23.966	0.021	26.415	0.009	171.289	0.000	87.218	0.003	24.695	0.261	197.760	0.000	325.847	0.000
Mother's educational background															
5.	Absence of formal education Up until the 5th grade Sixth through tenth grade 11th and 12th grade Diploma or graduate Postgraduate-level	28.956	0.089	24.868	0.207	103.289	0.391	110.238	0.073	60.985	0.004	145.391	0.256	326.313	0.011

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Father's educational background														
6.	Absence of formal education Up until the 5th grade Sixth to tenth grade 11th and 12th grade standards Diploma or graduate Postgraduate-level	30.599	0.061	44.491	0.001	86.115	0.837	115.230	0.038	39.524	0.275	150.495	0.171	347.367	0.001
Adolescent's employment status														
7.	Working/ employed Not working/ employed	3.333	0.504	3.171	0.530	39.913	0.005	15.775	0.608	3.094	0.876	86.693	0.000	139.796	0.000
Mother's occupation														
8.	Housemaker/ unemployed Part-time work Full-time position	8.368	0.398	5.824	0.667	78.797	0.000	44.057	0.168	6.686	0.946	67.423	0.104	110.337	0.420
Father's job status														
9.	Jobless Part-time work Full-time work	17.942	0.327	22.072	0.141	87.216	0.272	103.644	0.009	26.085	0.568	110.980	0.403	212.571	0.553
Monthly income of family (in INR)														
10.	≤ 10,000 10001–20,000 20001–30,000 > 30,000	20.249	0.063	9.803	0.633	64.450	0.324	43.227	0.853	26.233	0.198	118.339	0.004	187.934	0.080
Residence														
11.	Rural Urban	4.600	0.331	6.166	0.187	21.983	0.341	10.590	0.911	9.646	0.210	53.199	0.002	120.172	0.000

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Discussion

The present study confirms that flood affects the QOL of adolescents and the self-developed interventional tool VTT was effective among adolescents affected by the flood to improve their QOL.

After the occurrence of the flood, poor QOL was reported. In the pre-test the mean ± SD score related to the overall QOL among adolescents after the occurrence of a flood was 86.775 ± 10.481, whereas a similar study also revealed poor QOL among people one-month post-flood[5] and the mean ± SD score related to the overall QOL among post-flood survivors was 90.84 ± 10.78[6]. The mean ± SD score obtained for the adolescent's rating of their QOL was 3.667 ± 0.826 and for satisfaction with their health was 3.927 ± 0.956, whereas no similar study to compare these findings. The mean ± SD score for physical health was 23.592 ± 3.634, whereas a similar study also revealed the highest QOL in the physical domain among 25.4% of post-flood survivors.[6] The average score for psychological health was 20.662 ± 3.267. Previous research found that there was poor mental health following the flood,[7–10] that psychological issues were common among students in public and private schools (31% and 38.8%, respectively) and that they persisted in children for up to two years after the flood[9] and three years after the flood[10]. The social relationship domain (domain 3) had a mean ± SD score of 7.970 ± 1.621, with 47.6% of post-flood survivors having the highest QOL in this domain.[6] The mean ± SD score for environmental health (domain 4) was 26.955 ± 4.574, whereas a similar study revealed the poorest QOL in the environmental domain among 24.9% of post-flood survivors.[6]

After the administration of VTT, in the post-test, an increase in the mean ± SD score was obtained in the overall score and in all domains of QOL. The mean ± SD score related to the overall QOL among adolescents after the occurrence of a flood was 93.932 ± 9.134. The mean ± SD score obtained for the adolescents rating of their QOL was 4.085 ± 0.747, satisfaction with their health was 4.275 ± 0.775, physical health was 24.597 ± 2.786, psychological health was 21.882 ± 2.805, social-relationship was 8.735 ± 1.248, and environmental health was 30.357 ± 3.943. These results show that, at the p value < 0.05 level, there was a substantial improvement in the four domains, the two standardised questions, and the adolescent's overall quality of life following the intervention. Comparatively, there are no previous studies to compare the findings after the administration of VTT in the post-test.

In this study, a significant association of total QOL score was found with their age, religion, educational qualification, employment status as well as educational qualification of their mother, and father, and habitat, whereas no supporting literature was found. The adolescents who were willing to engage in the study and those who were selected using a convenient sample technique were the only subjects of the current investigation. A control group was not included in this study due to the chaotic environment and limited resources.

Conclusion

The present study revealed that there was a major increase in QOL scores in the post-test after administering the VTT among adolescents affected by the flood. However, due to the convenient sampling, the results cannot be generalised. So, an additional study with a different sampling technique would be necessary to confirm the findings of the present study.

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