APPENDICES

INFORMED CONSENT FORM

TITLE: YOGA FOR PSYCHOLOGICAL WELL BEING OF ORPHAN CHILDREN

Information to the participants/Teacher/HM/Parent/Legal Guardian

Yoga plays a vital role in the overall well-being of the children. The studies show that yoga-based intervention has shown significant enhancement of physical fitness, cognitive function and physiological well-being.

Thus this study, conducted as a part of the Ph.D. program, examines, your consent is sought for participation of your student/son/daughter in the study. If you consent, the investigator will interview your student/son/daughter along with other participants. In this interview, the interviewer will ask the participant some demographic questions and also investigates the psychological wellbeing through different scales. The information collected from your student/son/daughter would be helpful in diagnosing her psychological wellbeing. The Yoga intervention may take one hour a day, for six days a week, for 3 months. The intervention and the tests are expected not to cause any serious adverse effect on physical or mental health. During the entire period of the study your student/son/daughter will continue with his/her routine daily work activities.

Please note that you have the right to refuse your student's/son's/daughter's participation in the study at any time. Your refusal will not adversely affect his/her daily routine. Please also note that the information your student/son/daughter is going to divulge to us will be kept in utmost confidentiality.

Undertaking by the investigator:

Your consent for your student/s/son's/daughter's participation in the study is sought. You have a right to refuse consent or withdraw the same during any part of the study without giving any reason. I undertake to maintain complete confidentiality regarding the information obtained from your student/son/daughter during the course of the study. If you have any doubts about the study, please feel free to clarify the same. Even during the study, you are free to contact the investigator for clarifications if you so desire. The phone number of the investigator is given below:

Investigator Name	Phone Number
Shambhu Dayal Sharma	8415928986

Consent:

I have been informed about the procedures of the study in which my student/son/daughter is participating. The possible risks too have been explained to me as stated in the information. I have understood that I have the right to refuse my consent or withdraw it any time during the study without having any adverse effects. I am aware that by subjecting to this investigation, my student/son/daughter will have to give more time to assessments by the investigating team and that these assessments do not interfere with the benefits.

Signature of the Participant Signature of the investigator

(Name and Address) (Name and Designation)

Date: Place:

Signature of the Guardian

ASSESSMENT TOOLS

CHILD AND ADOLESCENT MINDFULNESS MEASURE(CAMM)

We want to know more about what you think, how you feel, and what you do. **Read** each sentence. Then, circle the number that tells **how often each sentence is true for you.**

	Never True	Rarely True	Some-times True	Often True	Always True
1. I get upset with myself for having feelings that don't make sense.	0	1	2	3	4
2. At school, I walk from class to class without noticing what I'm doing.	0	1	2	3	4
3. I keep myself busy so I don't notice my thoughts or feelings.	0	1	2	3	4
4. I tell myself that I shouldn't feel the way I'm feeling.	0	1	2	3	4
5. I push away thoughts that I don't like.	0	1	2	3	4
6. It's hard for me to pay attention to only one thing at a time.	0	1	2	3	4
7. I get upset with myself for having certain thoughts.	0	1	2	3	4
8. I think about things that have happened in the past instead of thinking about things that are	0	1	2	3	4
9. I think that some of my feelings are bad and that I shouldn't have them.	0	1	2	3	4
10. I stop myself from having feelings that I don't like.	0	1	2	3	4

COGNITIVE FUNCTIONING SCALE (CFS)

On the following page is a list of things that might be a problem for you. Please tell us **how much of a problem** each one has been for you during the **past ONE month** by circling:

0 if it is **never** a problem **, 1** if it is **almost never** a problem **, 2** if it is **sometimes** a problem **3** if it is **often** a problem, **4** if it is **almost always** a problem

*In the past **ONE month,** how much of a **problem** has this been for you …*

Cognitive Functioning (problems with…)	Never	Almost Never	Some-times	Often	Almost Always
1. It is hard for me to keep my	0	1	2	3	4
2. It is hard for me to remember what	0	1	2	3	4
3. It is hard for me to remember what	0	1	2	3	4
4. It is hard for me to think quickly	0	1	2	3	4
5. I have trouble remembering what I	0	1	2	3	4
6. I have trouble remembering more than one thing at a time	0	1	2	3	4

SHORT DEPRESSION & HAPPINESS SCALE (SDHS)

A number of statements that people have made to describe how they feel are given below. Please read each one & tick the box which best describes how frequently you felt that way in the past seven days, including today. Some statements describe positive feelings & some describe negative feelings. You may have experienced both positive & negative feelings at different times during the past seven days.

Si.no		never	rarely	some-times	often
1	I felt dissatisfied with my life				
2	I felt happy				
3	I felt cheerless				
4	I felt pleased with the way I am				
5	I felt that the life was enjoyable				
6	I felt that the life was meaningless				

MOOD AND FEELINGS QUESTIONNAIRE: Short Version

This form is about how you might have been feeling or acting **recently**.

For each question, please check (✓) how you have been feeling or acting ***in the past two weeks***.

If a sentence was not true about you, check NOT TRUE.

If a sentence was only sometimes true, check SOMETIMES.

If a sentence was true about you most of the time, check TRUE.

NOT TRUE = 0 SOMETIMES = 1 TRUE = 2

To code, please use a checkmark (✓)for each statement.	**NOT TRUE**	**SOME - TIMES**	**TRUE**
1. I felt miserable or unhappy.			
2. I didn't enjoy anything at all.			
3. I felt so tired I just sat around and did nothing.			
4. I was very restless.			
5. I felt I was no good anymore.			
6. I cried a lot.			
7. I found it hard to think properly or concentrate.			
8. I hated myself.			
9. I was a bad person.			
10. I felt lonely.			
11. I thought nobody really loved me.			
12. I thought I could never be as good as other kids.			
13. I did everything wrong.			

POSITIVE AND NEGATIVE AFFECT SCHEDULE FOR CHILDREN

This scale consists of a number of words that describe different feelings and emotions. Read each item and then circle the appropriate answer next to that word. Indicate to what extent you have felt this way during the past week

1= Very Slightly 2= A little 3=Moderately 4= Quite a bit 5=Extremely

Joyful	1	2	3	4	5
Mad	1	2	3	4	5
Afraid	1	2	3	4	5
Cheerful	1	2	3	4	5
Miserable	1	2	3	4	5
Happy	1	2	3	4	5
Scared	1	2	3	4	5
Lively	1	2	3	4	5
Proud	1	2	3	4	5
Sad	1	2	3	4	5

EMOTION REGULATION QUESTIONNAIRE (ERQ)

Instructions and Items: We would like to ask you some questions about your emotional life, in particular, how you control (that is, regulate and manage) your emotions. The questions below involve two distinct aspects of your emotional life. One is your emotional experience, or what you feel like inside. The other is your emotional expression, or how you show your emotions in the way you talk, gesture, or behave. Although some of the following questions may seem similar to one another, they differ in important ways.

For each item, please answer using the following scale:

1 2 3 4 5 6 7

strongly disagree neutral strongly agree.

1. ____ When I want to feel more positive emotion (such as joy or amusement), I change what I'm thinking about.

2. ____ I keep my emotions to myself.

3. ____ When I want to feel less negative emotion (such as sadness or anger), I change what I'm thinking about.

4. ____When I am feeling positive emotions, I am careful not to express them.

5. ____When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm.

6. ____ I control my emotions by not expressing them.

7. ____When I want to feel more positive emotion, I change the way I'm thinking about the situation.

8. ____ I control my emotions by changing the way I think about the situation I'm in.

9. ____When I am feeling negative emotions, I make sure not to express them.

10. ____When I want to feel less negative emotion, I change the way I'm thinking about the situation.

INSTITUTIONAL ETHICS COMMITTEE APPROVAL

स्वामी विवेकानन्द योग-अनुसन्धान-संस्थानम्
Swami Vivekananda Yoga Anusandhāna Samsthānam
(Declared as Deemed-to-be University under Section 3 of the UGC Act, 1956)
Eknath Bhavan, # 19, Gavipuram Circle, Kempegowda Nagar, Bangalore - 560 019
Ph: 080 - 2661 2669, Telefax: 080 - 2660 8645
E-mail: svyasa@svyasa.edu.in Website: www.svyasa.edu.in

RES/IEC-SVYASA/47/2015 June 04, 2015

To,
Dr. Rajesh S.K.,
Assistant Professor,
S-VYASA University,
Bangalore.

Reference:

"Yoga for Psychological Wellbeing of Orphan Children's". - Committee Approval of the above mentioned study.

Dear **Dr. Rajesh S.K.,**

We have received from you the following study related documents vide your letter dated December 20, 2014

1	Project Proposal
2	Informed consent form

Ethics committee meeting was held on January 25, 2015 at 10:00 AM to 1:00 PM at Eknath Bhavan, Bangalore. Above documents were examined and discussed in the meeting. After due consideration, the committee has decided to approve conducting the aforementioned study.

APPROVED
Subramanya
INSTITUTIONAL ETHICS COMMITTEE
SVYASA, BANGALORE

स्वामी विवेकानन्द योग-अनुसन्धान-संस्थानम्
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Ph: 080 - 2661 2669, Telefax: 080 - 2660 8645
E-mail: svyasa@svyasa.edu.in Website: www.svyasa.edu.in

This is to confirm that neither Dr. Rajesh S K nor any staff participating in this study were involved in the voting procedures and decision making.

The Institutional Review Board / Independent Ethics Committee (IEC) are expected to be informed about the progress of the study / any changes in the protocol and patient information / informed consent. The investigators are also expected to submit a copy of the final report to IEC for records.

This approval is valid up to the completion of the study at the site.

Please submit to the IEC, the status report of the study as per the SOPs.

The IEC is organized & operates according to the requirements of ICH-GCP, Indian Council of Medical Research Guidelines & Schedule Y.

Best Wishes,

Subramanya p

Dr. Subramanya p,
Member Secretary,
Institutional Ethics Committee,
S-VYASA, Bangalore.

ABBREVIATIONS

ADHD	Attention Deficit/Hyperactivity Disorder
AIDS	Acquired Immunodeficiency Syndrome
CAMM	Child and Adolescent Mindfulness Measure
CBT	Cognitive Behavioral Therapy
CFS	Cognitive Functioning Scale
ERQ	Emotion Regulation Questionnaire
NGOs	Non-Governmental Organizations
OC	Orphan Children
PANAS-C	Positive and Negative Affect Schedule for Children
RCT	Randomized Controlled Trial
SDHS	Short Depression Happiness Scale
SMFQ	Short Mood and Feelings Questionnaire
UNICEF	United Nations Children's Fund
WHO	World Health Organization

RAW DATA

Slno	Age	Gender	Group	Pre Mindfulness	Pre Reappraisal	Pre Suppression	Pre Happiness	Pre Depression	Pre Positive Affect
1	11	1	1	26	21	11	8	12	19
2	11	1	1	31	16	13	9	3	14
3	11	1	1	31	16	10	5	10	14
4	11	1	1	24	20	16	4	14	18
5	11	2	1	18	26	13	4	10	17
6	11	2	1	20	29	13	6	9	11
7	11	2	1	19	15	16	5	16	16
8	11	2	1	17	22	10	4	10	15
9	12	2	1	15	22	19	7	7	17
10	12	2	1	20	26	16	4	4	21
11	12	2	1	27	19	14	6	8	14
12	12	2	1	10	19	9	4	4	22
13	12	2	1	20	18	14	4	7	21
14	12	2	1	17	17	14	5	12	10
15	12	2	1	12	20	14	4	5	13
16	12	1	1	18	26	10	3	14	17
17	12	1	1	20	20	14	7	14	17
18	13	2	1	17	17	16	6	17	21
19	13	2	1	33	18	16	6	10	18
20	13	2	1	21	19	15	5	13	13
21	13	2	1	15	18	16	6	11	18
22	13	2	1	22	18	12	3	14	16
23	13	2	1	9	19	12	6	12	19
24	13	1	1	20	22	14	7	9	23
25	13	1	1	19	18	16	5	14	17
26	13	1	1	17	17	18	5	9	18
27	13	1	1	21	16	10	6	3	22
28	13	1	1	28	16	7	9	2	15
29	14	1	1	30	17	18	6	16	19
30	14	1	1	18	20	7	6	15	8
31	14	1	1	27	12	17	3	7	16
32	14	2	1	32	22	10	6	15	15
33	14	2	1	18	18	15	6	11	16
34	14	2	1	15	24	16	4	10	19
35	11	2	2	26	22	11	5	11	13

36	11	2	2	9	23	8	6	8	19
37	11	2	2	19	21	14	6	8	18
38	11	2	2	15	21	18	3	6	22
39	11	1	2	17	19	18	8	17	15
40	11	1	2	9	22	11	4	10	15
41	11	1	2	22	19	18	7	8	20
42	11	1	2	19	25	14	4	5	24
43	12	2	2	19	17	18	7	6	17
44	12	2	2	25	13	10	8	11	11
45	12	2	2	27	29	9	8	3	16
46	12	2	2	18	25	17	2	19	9
47	12	2	2	16	20	8	6	9	17
48	12	2	2	28	19	16	5	7	16
49	12	1	2	29	20	12	6	15	21
50	12	1	2	30	25	19	5	10	21
51	12	1	2	31	24	7	3	8	21
52	13	2	2	25	22	13	5	11	14
53	13	2	2	19	22	16	6	8	17
54	13	2	2	22	21	16	5	12	17
55	13	2	2	16	18	11	5	15	23
56	13	2	2	20	25	10	5	10	18
57	13	2	2	17	18	19	9	4	18
58	13	2	2	32	12	6	9	7	21
59	13	1	2	18	26	19	7	9	12
60	13	1	2	25	20	9	2	3	19
61	13	1	2	17	27	14	3	11	19
62	13	1	2	29	25	10	5	7	25
63	14	2	2	22	10	13	6	10	19
64	14	2	2	27	22	12	5	9	17
65	14	2	2	28	19	12	3	9	14
66	14	2	2	19	24	13	3	10	22
67	14	1	2	24	20	5	4	10	22

Slno	Group	Pre Negative Affect	Post Mindfulness	Post Reappraisal	Post Suppression	Post Happiness	Post Depression	Post Positive Affect	Post Negative Affect
1	1	14	29	23	5	4	5	22	11
2	1	24	33	22	16	10	4	18	18
3	1	18	30	22	15	7	11	13	21
4	1	17	36	29	7	6	11	21	19
5	1	12	35	19	5	9	3	22	13
6	1	22	38	23	6	7	9	18	12
7	1	14	31	16	12	7	6	19	14
8	1	20	29	17	13	4	4	18	14
9	1	13	27	16	12	5	12	18	17
10	1	11	33	22	9	7	7	22	17
11	1	15	29	22	12	9	7	22	13
12	1	11	25	26	11	7	8	19	16
13	1	19	23	22	11	6	4	24	11
14	1	18	27	20	15	6	15	16	16
15	1	15	33	18	17	9	5	15	13
16	1	18	30	22	10	4	14	15	20
17	1	21	33	22	17	10	12	16	20
18	1	12	10	20	11	6	8	17	18
19	1	12	20	22	12	9	6	18	14
20	1	12	13	25	13	2	11	19	11
21	1	16	14	20	12	2	5	18	11
22	1	21	18	18	15	8	8	18	11
23	1	16	18	19	16	9	14	16	16
24	1	16	26	22	15	10	4	19	12
25	1	20	11	15	17	4	8	11	13
26	1	20	21	22	12	5	4	19	13
27	1	23	28	21	10	4	6	13	15
28	1	17	26	18	12	5	2	22	13
29	1	14	19	19	11	7	8	16	13
30	1	21	32	19	12	4	6	20	17
31	1	13	16	22	9	5	7	18	14
32	1	20	26	24	15	9	8	18	13
33	1	15	34	22	7	10	13	21	20
34	1	13	22	19	9	4	9	22	16
35	2	17	21	19	15	5	12	18	15
36	2	24	12	15	15	4	10	19	20

37	2	20	27	20	13	4	6	21	17
38	2	16	22	19	13	5	14	19	18
39	2	24	24	14	12	7	13	20	17
40	2	10	18	15	11	5	10	21	13
41	2	14	21	24	9	7	15	14	12
42	2	14	15	24	17	4	6	17	22
43	2	13	28	24	17	6	8	22	14
44	2	18	19	25	13	4	8	17	15
45	2	18	27	21	15	3	4	23	16
46	2	21	22	13	18	7	15	19	15
47	2	14	17	27	13	8	10	15	17
48	2	19	27	30	13	4	8	13	12
49	2	12	27	24	7	7	9	21	15
50	2	15	25	22	12	7	11	17	16
51	2	16	29	23	12	4	5	19	12
52	2	13	21	25	9	7	8	19	14
53	2	21	19	20	16	8	10	17	15
54	2	22	23	20	16	7	3	24	19
55	2	19	18	29	17	4	7	20	14
56	2	12	16	16	13	3	12	23	13
57	2	12	18	15	18	7	12	25	16
58	2	10	31	18	7	7	13	15	15
59	2	15	23	24	10	2	13	16	18
60	2	10	26	26	10	6	7	17	19
61	2	13	26	21	6	7	12	18	15
62	2	13	30	27	17	7	12	18	15
63	2	13	27	19	9	3	8	20	12
64	2	7	21	20	15	8	7	20	10
65	2	14	20	28	9	6	10	19	16
66	2	10	18	20	9	8	8	17	15
67	2	15	26	24	8	7	7	11	18

Slno	Age	Gender	Mindfulness	Mood Feeling	Cognitive	Positive Emotion	Negative Emotion
1	12	2	26	6	200	14	18
2	13	2	19	17	250	18	17
3	13	2	24	13	200	17	12
4	12	2	17	12	225	11	22
5	12	2	14	9	200	16	14
6	12	2	21	13	150	15	20
7	14	2	13	11	200	14	15
8	14	2	16	17	175	17	21
9	14	2	17	7	125	21	12
10	13	2	9	16	250	13	12
11	12	2	13	14	175	18	16
12	12	2	16	17	275	16	21
13	12	2	20	15	375	19	16
14	12	2	13	12	250	23	16
15	12	2	11	17	200	17	20
16	12	2	8	12	350	18	20
17	12	2	23	6	150	22	23
18	13	2	30	5	250	15	17
19	12	2	27	6	175	19	14
20	12	2	27	18	150	8	21
21	12	2	13	18	100	15	20
22	12	2	8	14	325	16	15
23	13	2	21	11	450	19	5
24	12	2	20	11	400	18	6
25	13	2	11	9	325	22	16
26	12	2	14	20	375	5	24
27	12	2	19	13	250	15	10
28	12	2	20	11	150	20	14
29	12	2	22	8	250	24	14
30	13	2	35	9	225	17	7
31	12	2	16	14	150	11	18
32	12	2	20	6	150	16	18
33	12	2	3	29	150	9	21
34	13	2	14	14	175	14	13
35	13	2	8	25	300	17	21
36	13	2	22	15	100	17	22
37	12	2	16	18	250	23	19
38	12	2	10	13	275	18	12

39	13	2	35	7	275	18	7
40	12	2	19	6	100	21	10
41	13	2	26	12	225	12	15
42	13	2	26	6	125	19	10
43	11	2	23	14	325	19	13
44	11	2	35	10	450	25	13
45	13	2	24	13	325	19	13
46	13	2	27	12	250	17	7
47	11	2	25	12	300	14	14
48	11	2	20	15	425	17	11
49	11	2	30	8	500	21	13
50	11	2	34	6	250	22	13
51	12	2	19	12	225	18	12
52	11	2	21	7	300	18	14
53	11	2	24	10	250	22	17
54	11	2	26	10	350	22	13
55	10	2	36	7	500	24	5
56	12	2	12	18	350	16	16
57	12	2	19	8	325	23	13
58	12	2	12	17	200	15	20
59	12	2	15	15	325	16	20
60	12	2	22	20	150	17	18
61	12	2	17	9	325	18	14
62	12	2	11	14	250	19	11
63	12	2	25	8	525	18	11
64	12	2	9	11	300	18	11
65	12	2	16	17	250	16	16
66	11	2	28	11	300	11	13
67	11	2	29	7	325	19	13
68	11	2	28	9	300	13	15
69	11	2	32	5	225	22	13
70	13	2	24	10	175	18	14
71	13	2	29	11	175	18	13
72	13	2	22	12	150	22	16
73	14	2	28	9	450	21	9
74	14	2	14	17	350	19	18
75	14	2	13	16	400	20	10
76	15	2	10	13	475	21	13
77	14	2	15	18	350	14	12
78	14	2	8	22	200	10	22
79	15	2	15	11	275	22	14
80	14	2	7	11	200	17	15
81	14	2	19	7	375	23	8

82	14	2	16	18	200	19	15
83	14	2	19	13	350	15	17
84	14	2	21	21	275	13	12
85	11	2	29	12	475	21	15
86	11	2	15	14	375	17	16
87	11	2	32	8	550	19	12
88	11	2	24	11	400	19	14
89	11	2	24	13	500	17	15
90	11	2	39	6	550	24	5
91	11	2	28	10	500	20	14
92	11	2	24	15	275	23	13
93	14	2	17	16	300	15	15
94	14	2	9	16	275	16	18
95	14	2	15	21	300	17	19
96	14	2	8	26	320	7	17
97	14	2	15	13	375	19	16
98	14	2	15	11	325	14	15
99	14	2	18	22	300	11	18
100	12	1	34	15	325	19	14
101	12	1	26	13	250	14	18
102	12	1	15	10	150	17	13
103	13	1	23	7	150	21	11
104	13	1	21	7	150	22	11
105	13	1	21	10	125	21	19
106	15	1	20	15	175	10	18
107	15	1	25	8	300	13	15
108	13	1	15	17	175	17	18
109	13	1	29	13	175	18	12
110	12	1	24	10	325	16	13
111	12	1	17	13	400	19	13
112	12	1	11	14	500	13	17
113	13	1	29	12	175	17	14
114	12	1	22	10	325	16	19
115	12	1	8	22	325	21	12
116	14	1	20	13	175	21	15
117	14	1	19	11	200	21	16
118	11	1	29	13	525	22	10
119	11	1	28	13	425	22	15
120	11	1	29	10	525	20	12
121	11	1	29	10	475	22	15
122	11	1	30	9	550	21	14
123	11	1	36	9	525	23	7
124	11	1	25	8	550	22	11

125	11	1	13	22	150	14	24
126	13	1	16	14	275	13	21
127	11	1	19	14	350	21	19
128	11	1	21	19	350	19	14
129	11	1	26	15	400	18	17
130	12	1	28	11	375	19	16
131	11	1	28	7	300	19	12
132	11	1	16	19	225	16	13
133	11	1	37	9	425	20	17
134	13	1	28	16	150	21	20
135	14	1	15	15	225	18	15
136	15	1	14	13	325	19	11
137	11	1	28	15	275	25	16
138	14	1	14	15	225	18	15
139	14	1	15	15	375	18	15
140	15	1	19	11	250	20	12
141	14	1	19	10	300	20	10

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Review Article

Rehabilitation in orphan children: Role of evidence-based yoga

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Abstract

More than 153 million children worldwide have been orphaned by the loss of one or both parents and millions more have been abandoned. There is a strong association between child health measures and the health of their primary caregivers. Poor caregiver health is a strong signal for poor health of orphan children. The strategies to support orphan children may include taking steps to ensure food security, foster gender equality, and prevent and treat traumatic events. Yoga, a feasible and acceptable activity with self-reported benefits to child's mental and physical health, may play effective role in the rehabilitation of orphaned children.

Key Words: Caregivers, health, orphan children, rehabilitation, yoga

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INTRODUCTION

Orphan children (OC) are not actively consulted and encouraged to participate in helping to solve the problems they are affected by. Moreover, there is a lack of coordination between caregiver organizations, leading to ineffective and inefficient service provision for this particular vulnerable group (Earnshaw, Njongwe, English, & Worku, 2009). Africa is most often referenced when discussing the orphan burden whereas Asian countries are caring for 71.5 million orphans (UNICEF, 2011). In Asia, high mortality among young parents from conditions such as malaria, tuberculosis, human immunodeficiency virus (HIV)/ acquired immunodeficiency syndrome (AIDS), pregnancy complications, violence and accidental deaths, and natural disasters are responsible for the large and increasing number of OC (Hosegood et al., 2007; UNICEF, 2008; World Health Organization, 2011). Similarly, it was reported that OC had significantly higher scores than non-OC on individual items in the Beck Youth Depression Inventory that are regarded as particularly "sensitive" to the possible presence of a depressive disorder, i.e., vegetative symptoms, feelings of hopelessness, and suicidal ideation (Atwine, Cantor-Graae, & Bajunirwe, 2005). Furthermore, OC were found to suffer greater psychological distress than non-OC (Makame, Ani, & Grantham-McGregor, 2002).

General consideration

In general, it has been observed that OC are not receiving adequate food or balanced diets. In addition, they had difficulties in accessing health facilities. The condition of education assistance is also limited, and abuse may generally not get reported for fear of reprisal. OC may generally rely on family and community networks for assistance, however, the strain experienced due to offering assistance meant that the assistance may not be consistent. Some OC also may rely on non-governmental organizations (NGOs) for food donations, however, many

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of the OC might be unaware of the services offered by these organizations.

Care givers and care giving linked with household and community characteristics

The death of the last parent has a profound effect on survivors, and therefore, OC are often coping with grief, loss, and awareness that their lives are forever changed (McDaniel & Clark, 2009). Furthermore, in the case of OC with HIV/AIDS, families play central roles in caring, and there are two family resources essential for supporting children, i.e., time and money. However, it is observed that parents have less time for their OC, and these children experience greater health and academic problems (Heymann & Kidman, 2009). Communities are playing an important role in helping OC families by providing adequate childcare and financial support. Unfortunately, while communities commonly offer informal assistance, the value of such support may not be adequate to match the magnitude of the need. Research shows that OC are vulnerable to experiencing multiple traumatic events and suffer poor self-regulation leading to emotional and behavioral difficulties and trauma-related disorders (Eisenberg et al., 2005; Whetten, Ostermann, Whetten, O'Donnell, & Thielman, 2011).

Yoga: An innovative approach

In order to alleviate the burden of mental illness affecting vulnerable children, development of an evidence-based effective and feasible therapeutic intervention is needed. Yoga is a feasible and acceptable activity with self-reported benefits to the child's mental and physical health. The OC with trauma-related distress showed improvements in symptoms after participation in an 8-week yoga program as compared to controls (Culver, Whetten, Boyd, & O'Donnell, 2015). Further, when children are orphaned they are at a higher risk for experiencing the potentially traumatic events due to lack of adequate adult protection (Ahmad et al., 2005). Suryanamaskara training, a part of yoga, enhances selective attention among OC and may be useful for their academic performance (Devi, Ganpat, Kumar, & Ramarao, 2015). Based on previous literary and experiential review research in yoga, suggested evidence-based yoga program for effective rehabilitation in OC may include following yoga practices (yogic rehabilitation module for orphan children) (Culver et al., 2015; Devi et al., 2015; Saraswati, 2005):

Shithilikarana Vyayama (loosening and stretching practices)

- *Supta Pawanmuktasana* (leg lock pose) (Saraswati, 2005)
- *Suryanamaskara* (salutations to the sun) (Devi et al., 2015).

Asana (postures) (Culver et al., 2015; Saraswati, 2005)

- *Ardhakati Chakrasana* (the half wheel pose)
- *Shashankasana* (hare pose)/*Yoga Mudra* (attitude of psychic union)
- *Ushtrasana* (camel pose)
- *Bhujangasana* (cobra pose)
- *Shalabhasana* (locust pose)
- *Viparitakarani Asana* (inverted pose)
- *Sarvangasana* (shoulder stand pose)
- *Matsyasana* (fish pose)
- *Ardha Shirshasana* (half headstand pose)/*Shirshasana* (headstand pose)
- *Shavasana* (corpse pose).

Pranayama (breathing practices) (Saraswati, 2005)

- *Nadi Shodhana Pranayama* (psychic network purification).

Dharana and *Dhyana* (concentration and meditation practices) (Culver et al., 2015)

- *OM* Meditation (*OM* chanting).

Kriya (cleansing practices) (Saraswati, 2005)

- *Jala Neti* (nasal cleansing with water).

CONCLUSION

It may be suggested that the communities may strengthen the capacity of OC families by implementing affordable quality childcare for 0–6 year olds, after-school programming for older children and youth, supportive care for ill children and parents, microlending to enhance earnings, training to increase access to quality jobs, decent working conditions, social insurance for the informal sector, and income and food transfers when families are unable to make ends meet (Heymann & Kidman, 2009). Policy makers and health economists may establish family-based clinics in which both OC and their caregivers can receive treatment (Thielman, Ostermann, Whetten, Whetten, & O'Donnell, 2012). The link between traumatic events and poor OC health draws further attention to the need for sustainable social services to address the causes and consequences of trauma for OC (Whetten et al., 2011). Similarly, as food insecurity correlates with poor health (Caballero, 2002; Cook et al., 2004), policy to add adequate nutrition for children during their formative years need to be taken into consideration. In addition, large-scale randomized trials are needed to validate the efficacy of yoga for rehabilitation in OC.

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Conflicts of interest

There are no conflicts of interest.

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Letter to Editor

Orphan Children and Yogic Approach

Orphan children are more likely to be emotionally needy, insecure, poor, exploited, abused, or neglected, and they show high resilience in coping.[1] The children who have lost one parent (single orphan) or both parents (double orphan) usually live in stressful conditions.[2]

Many of the studies show that orphans are highly prone to psychological distress, depressive disorders of vegetative symptoms, anxiety, a sense of uselessness, hopelessness, and suicidal tendency. Hence, only material support and sustenance (in the form of food, clothing, and shelter) may not be enough/effective to address these issues in orphans.[3] In addition to this material support, they also need additional support to ensure psychological well-being.[4] Thus, our search for effective interventions leads to the solution through yoga, as many studies show that yoga can lead to psychological well-being and symptom reduction.[5] This is understandable from the attention and acceptance of Yoga in the light of positive role that yoga can play in prevention and management of psychological conditions.

There is a progressive trend toward the use of yoga as a mind-body complementary and alternative medicine intervention to improve specific physical and mental health conditions. Yoga is a holistic system of varied mind-body practices that can be used to improve mental and physical health, and it has been utilized in a variety of contexts and situations.[6] A study assessing the impact of yoga intervention on a group of Israeli school children residing in the region affected by the Second Lebanon War reveals that yoga may be beneficial as an intervention on children in postwar stress situations. The participation in yoga was both enjoyable and beneficial to children living in stressful conditions.[2] A study on effectiveness of 3-month yoga for orphans reported that yoga enhances their executive function and may have potential implications on learning, classroom behavior, and in handling the adverse circumstances and stand as a preventive measure for mental health problems.[7] Furthermore, an evidence-based yoga review suggests that certain postures, breathing techniques, concentration, and meditation practices help in effective rehabilitation of orphans.[8] A study aimed to assess the effect of a 12-week yoga program on the minimum muscular fitness of adolescents dwelling in an orphanage suggests that yoga has considerable benefits to improve muscular fitness and may be recommended as an effective training activity.[9]

Based on previous research findings, yoga program for orphans may include[6-9] warm-ups, loosening and stretching practices, Surya Namaskara, yoga postures (asanas) which include standing, sitting, prone and supine asanas, Pranayama, and trataka.

To address the problems of orphan children, it is recommended setting up of a National Policy and Support Services for Orphans, Child Guidance Counsellors in those schools having more number of orphans, and yoga as a social skills training for orphan children.

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Role of Yoga for Psychological Distress in Orphaned Adolescents

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Letter to the Editor

The absence of family support influences the general health behaviour of the adolescent and the factors that lead to the development of disease at a given point in time are likely to have their roots in a complex chain of environmental events that may have begun a year earlier. [1] The death (orphan) or disappearance (separated) of one (single orphan/separated) or both parents (double orphan/ separated) often involves psychological distress, risk-taking behaviours, caregiver abuse and human rights violations. [2] An orphaned adolescent (OA) who often experience caregiver changes and report higher psychological distress, depression, suicidal tendency, alcohol abuse and impaired academic performance are at increased risk of maltreatment and sexual abuse compared to non-orphan. [3] Therefore a better understanding about their experiences may help inform policy as well as prevention and intervention efforts.

First of all, there is a need to consider alternative and potentially empowering approaches to psychological distress in OA. Yoga-related self-care or self-management strategies are widely accessible, are empowering, and may address the mind–body symptoms of stress related disorders. [4] Yoga is a feasible and acceptable activity with self-reported benefits to child mental and physical health. A study on effectiveness of three months yoga for OA reported that yoga enhances their executive function and may have potential implications on learning, classroom behaviour and in handling the adverse circumstances and stand as a preventive measure for mental health problems. [5] Furthermore, an evidence-based yoga review suggests that certain postures, breathing techniques, concentration and meditation practices helps for effective rehabilitation in orphans. [6] As per previous report that children with trauma-related distress shows improvements in symptoms after participation in an 8-week yoga program compared to controls, [7] it may suggested that regular yoga practice by OA may serve as a useful adjunctive component of trauma-focused treatment to build skills in tolerating and modulating physiologic and affective states that have become deregulated by trauma exposure. Based on previous research findings, suggested evidence-based yoga program for OA may include [4-7] Suryanamaskara (salutations to the sun), Jalaneti (nasal cleansing with water), Nadishodhana Pranayama (alternate nostril breathing) and Om meditation.

Conflict of Interest

All authors disclose that there was no conflict of interest.

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Original Article

Psychiatry Section

Relation between Mindfulness and Depression among Adolescent Orphans

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ABSTRACT

Introduction: Even though children in orphanages experience's multifaceted psychosocial problems, limited research has focused on psychological protective factors that can lessen the effect of orphanhood.

Aim: To examine associations between mindfulness and psychological factors (i.e., depression, cognitive function, positive emotion, and negative emotion) among adolescent orphans.

Materials and Methods: This was a descriptive correlation study and 140 orphan children living in three orphan homes, Tamil Nadu, India were recruited. Study's instruments included Child and Adolescent Mindfulness Measure (CAMM), Cognitive Functioning Scale (CFS), Short Mood and Feelings Questionnaire (SMFQ) and Positive and Negative Affect Schedule for Children (PANAS-C).

Results: There was significant correlation observed between mindfulness and depression among orphan adolescents (r=-0.53, p<0.01). Further, mindfulness had significant relationships to cognitive function (r=0.30, p<0.01), positive affect (r=0.33, p<0.01) and negative emotion (r=-0.38, p<0.01). Regression analysis showed that depression accounted 39% of variance in the model containing mindfulness, positive affect and negative affect.

Conclusion: This study supports the emerging literature on the benefits of mindfulness construct. Present findings will encourage the mindfulness-based interventions targeting well-being of an orphan adolescent.

Keywords: Cognitive, Negative affect, Positive affect, Psychological factors, Self-regulation

INTRODUCTION

According to United Nations Children's Fund (UNICEF), a child below 18 years of age, who has lost one or both parents to any reason of death is considered as an orphan [1]. The UNICEF report 2012 has estimated 3,10,00,000 orphans in India [2]. In an orphanage setup, the children suffer from multifaceted and interconnected psychosocial issues [3]. Orphans in institutional homes were found to suffer from behavioural and emotional problems [4] paternal, maternal, and double orphans exhibited more-severe distress than non orphaned, non vulnerable children. Orphanhood remained associated with psychosocial distress after we controlled for differences in more-proximate determinants. A recent study reported a high prevalence of depression, anxiety, and stress as well as low self-esteem among adolescents in orphanages [5].

Mindfulness is hypothesised as a state of attentiveness to present events and experiences that is unmediated by discursive or discriminating cognition [6]. Clinicians working in the area of child and adolescent issues, the mindfulness-based programs provides an innovative solution for enhancing the well-being [7]. Mindfulness is associated positively with outcomes such as quality of life and academic competence [8]. Further, it is negatively related with the somatic complaints, internalising symptoms, maladaptive processes of thought suppression and psychological inflexibility [8]. Hence, the current study was designed to achieve the following specific aims among adolescents in orphanages: (1) to examine associations between mindfulness and depression; (2) to examine associations of mindfulness and psychological factors (i.e., cognitive function, positive emotion, and negative emotion); and (3) to examine the extent towhich mindfulness account for significant variance in psychological well-being. To our information, this may be the first survey that examined the relationship between mindfulness and depression among orphans.

MATERIALS AND METHODS

Participants

One hundred and forty orphan children living in three orphan homes (Karunai Illam Charitable Trust, Good Life Centre and Reaching The Unreached), Tamil Nadu, India were included in this descriptive correlation study. A priority sample size computation was carried out based on an earlier study that reported significant correlation (r=0.26) between mindfulness and positive affect. From this, estimated sample size was 112 participants, with α=0.05 and (1-β)=0.80 [9]. Data collection was done from February 2016 to March 2016. The inclusion criteria of the current study were adolescents aged between 11 and 15 years [10], with the ability to read, write and comprehend information. The exclusion criteria were adolescents diagnosed with severe psychiatric ailments (ongoing violence, evidence of self-harming or suicidal ideations), developmental disability or intellectual disability, and physical impairment. The exclusion of severe psychiatric condition was based on participants personal files. Participants received no financial return for their participation.

Procedure

All recruitment and study procedures were approved by the Institutional Ethical Committee of SVYASA Yoga University (RES/IEC-SVYASA/47/2015). A prior informed consent was obtained from the orphanage head and a signed inform assent was obtained from the children after explaining in detail about the nature of the study. The interviewers were trained in psychological assessments. Participant's demographic details and psychological questionnaires were assessed individually. The average completion time for assessments was 20 minutes. Once participants had completed the questionnaire, they were fully debriefed to the nature of the study.

Child and Adolescent Mindfulness Measure (CAMM) [8,11] 413

The 10-item CAMM measure was administered to evaluate the mindfulness. The CAMM estimates the degree to which adolescents perceive the internal experiences, act with awareness, and admits the core experiences without judging them. It has a single factor structure. Participant has to indicate how each item reflected their experience using a 5-point scale from 0 (Never true) to 4 (Always true). All items in this scale described actions contrary to a mindfulness perspective. Therefore, each question was reverse scored and added to create a total score. High scores indicate a high degree of mindfulness. The reliability of the scale demonstrates a good internal consistency of Cronbach's alpha=0.87, while the validity of the research using CAMM suggests that the measure has good concurrent validity.

Cognitive Functioning Scale (CFS) [12]

The Cognitive Functioning Scale (six questions) asks questions regarding memory and attention over the last month. The scale was answered using a five-point Likert scale (0=never a problem; 1=almost never a problem; 2=sometimes a problem; 3=often a problem; 4=almost always a problem). Items are reverse scored and linearly transformed to a 0-100 scale (0=100, 1=75, 2=50, 3=25, 4=0). Higher scores indicate the better level of Cognitive Functioning. Validation report shows a significant association between CFS and Behaviour Rating Inventory of Executive Function, a widely validated measure of executive functioning. The CFS has demonstrated strong psychometric properties across pediatric populations [13].

Short Mood and Feelings Questionnaire (SMFQ) [14,15]

Children's depression measured by 13 items in SMFQ, which focuses on the affective, cognitive and somatic components of depression. SMFQ is a unidimensional scale. The participants rate each statement on 2 (true), 1 (sometimes true), or 0 (not true) scale over the past two weeks. SMFQ correlates highly with the standard measures of depression and discriminates depressed from non depressed children in general population samples. The scores on each item can then be summed to produce a total score ranging from 0 to 26. Score 11 and above are considered as high levels of depressive symptoms. The SMFQ showed high internal reliability, with a Cronbach's alpha of 0.84 [16].

Positive and Negative Affect Schedule for Children (PANAS-C) [17-19]

The PANAS-C consist of 10-item scale desgined to measure positive affect (PA) and negative affect (NA).Children rate on a 5-point Likert scale (1=very slightly or not at all, 5=extremely) the extent to which they have felt PA (joyful, cheerful, happy, lively, proud) and NA (miserable, mad, afraid, scared, sad). Participants rated the degree to which they have experienced each particular emotion during the previous two weeks. The total score ranged from 5 to 25 for each of the domains, the positive and negative affect. The PANAS-C differentiate youth with associated clinical disorders apart from youth with non-targeted emotional and behavioural problems. The PANAS-C subscales have shown good internal consistency and modest convergent and discriminant validity.

STATISTICAL ANALYSIS

All statistical analysis was performed using the computing environment R (version 3.4.0). Pearson correlations were used to examine the association between mindfulness, depression, cognitive function, positive affect and negative affect. A multiple regression was run to predict depression from mindfulness, positive affect and negative affect.

RESULTS

The sample consisted of 42 boys and 98 girls. Mean age of the subjects was 12.41 years (SD=1.18). Descriptive statistics for all variables and the zero-order correlation between variables is summarised in [Table/Fig-1]. Mindfulness was significantly and negatively correlated with depression (r=-0.53, p<0.01)and negative affect (r=-0.38, p<0.01). Further, the significant and positive association observed with cognitive (r=0.30, p<0.01) and positive affect (r=0.33, p<0.01). Correlations between cognitive function with depression and negative affect were significant and negative. Furthermore, positive affect was significantly and negatively correlated with depression (r=-0.44, p<0.01) and negative affect (r=-0.43, p<0.01).

Variable	M	SD	1	2	3	4
1. Mindfulness	20.70	7.35				
2. Depression	9.54	4.22	-0.53**			
3. Cognitive	301.43	111.19	0.30**	-0.27**		
4. Positive affect	17.90	3.64	0.33**	-0.44**	0.35**	
5. Negative affect	14.70	3.95	-0.38**	0.49**	-0.44**	-0.43**

[Table/Fig-1]: Means, standard deviations, and correlations.
Note.** indicates p<.01. M and SD are used to represent mean and standard deviation, respectively.

The multiple regression model statistically significantly predicted depression, F(3, 136)=31.23, p<0.001, adj. R^2=0.39. All three variables added statistically significantly to the prediction, p<0.05. Regression coefficients can be found in [Table/Fig-2].

DISCUSSION

This study sets out to examine the connection between mindfulness and depression among adolescents living in the orphanages. Participants in this study had no formal training in mindfulness techniques. The significant association between dispositional mindfulness and depression confirmed our primary hypothesis. Further, mindfulness had significant relationships to positive and negative emotion. This study supports the emerging literature on the benefits of mindfulness construct [6,7].

Predictor	B	B 95% CI (LL, UL)	Beta	Beta 95% CI (LL, UL)	sr^2	sr^2 95% CI (LL, UL)	r	Fit
(Intercept)	14.02**	(9.18, 18.86)						
Mindfulness	-0.21**	(-0.29, -0.12)	-0.36	(-0.50, -0.22)	0.11	(0.03, 0.19)	-0.53**	
Positive Affect	-0.24**	(-0.41, -0.07)	-0.21	(-0.35, -0.06)	0.03	(-0.01, 0.08)	-0.44**	
Negative Affect	0.28**	(0.12, 0.44)	0.26	(0.11, 0.41)	0.05	(-0.01, 0.11)	0.49**	
								R^2=0.408**
								95% CI (0.27,0.50)

[Table/Fig-2]: Regression results using depression as the criterion.
Note. ** indicates p< .01. A significant b-weight indicates the beta-weight and semi-partial correlation are also significant. b represents unstandardized regression weights; beta indicates the standardized regression weights; sr2 represents the semi-partial correlation squared; r represents the zero-order correlation. LL and UL indicate the lower and upper limits of a confidence interval, respectively. In-text the adjusted R-squared is referred and reported, while in the table R-squared that has been adjusted for the number of predictors in the model.

Furthermore, correlation analysis showed that all the variables in this study (mindfulness, cognitive, depression, positive affect and negative affect) had a significant influence on each other among orphan adolescents. This finding is consistent with a previous research reporting on mindfulness and psychological well-being [20].

Further, adolescence is the most rapid phase of human development and highly vulnerable to mental disorders, which in turn cause a significant long-term disability [21]. Depression is a significant contributor to the global burden of mental health in adolescent's [22]. Previous finding highlights, orphanage children show more negative emotions and less positive emotions in comparison with non-orphanage children [4,5]. Furthermore, orphans had scored significantly higher level of depression than non-orphans due to lack of extended family system, which is an important source of solace and care giving [23].

Research suggests that mindfulness, a positive dispositional trait inherent to all of us can deliver lasting improvements in self-awareness and emotional stability [7]. Further higher level of mindfulness was associated with better dispositional self-control and way to abstrain from maladaptive impulsive behaviour [24,25]. Furthermore, relatively short mindfulness based intervention showed enhancement of self-regulation and prosocial behaviour in young children [26]. Further, the majority of studies on mindfulness, emphasise mostly healthy participants recruited from schools [27]. Few studies explore the psychological protective factors that can mitigate the effect of orphanhood and enhance psychological well-being. Current study highlights the scope of mindfulness-based intervention for the well-being of orphan children.

Potential mechanisms by which dispositional mindfulness enhance well-being may be due to the present movement awareness and non-reactivity which in turn enhance the self-regulated behaviour and positive emotional states. Further, according to the previous studies, dispositional mindfulness is positively correlated with psychological well-being and emotional regulation [28]. Furthermore, current results are in line with the previous research that showed significant association of mindfulness to better emotional intelligence, enhanced positive affect,lesser levels of negative affect, and greater life satisfaction [29]. Empirical evidence from mindfulness-based programs has shown noteworthy enrichment of children's psychological, physiological, and social development [30-32].

LIMITATION

There are some limitations to this study that needs to be considered. The convenience sampling method and limited sample size may limit the generalisation. However, the population is very much hard to approach. Hence, convenience sample may be the only possible way to study this population. Further, lack of information concerning the reasons for orphaning, years of the orphanhood, and the causes of parental demise may be another limitation. Furthermore, the causal direction of this relationship is uncertain in this study due to cross-sectional design. Interventional study on mindfulness training may provide causal relationships between mindfulness and well-being among orphans. Data collection was done using a set of self-rated questionnaires. Response biases may compromise self-report measures. Future work should explore comprehensive behavioural and physiological measures.

CONCLUSION

Despite these limitations, the present study confirmed our primary hypothesis; dispositional mindfulness is negatively correlated with depression. Mindfulness approaches can be taught to orphan adolescents to improve self-regulation and cope with the psychosocial stress of orphanhood. This study suggests that enhancement of mindfulness in orphan populations and understanding possible mechanisms linking mindfulness and well-being may be a fruitful avenue for future research. Current findings will aid the development of interventions targeting well-being in an orphan adolescent.

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