

## Profiling the 20<sup>th</sup> Indian Expeditioners at Antarctica

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### Abstract

*The ice-covered land of Antarctica appears to have extreme environmental conditions which would make living there for even a short while extremely stressful. With the backdrop of the conditions that prevail in the ice-covered continent, a study was undertaken to understand stress, anxiety and loneliness levels and the sexuality profile of the members of the 20<sup>th</sup> Indian Expedition at Antarctica (Summer Team). Results indicate that the stress, anxiety and loneliness levels felt by the expedition members were low. The sexual behavior was also found to be appropriate in the members. The socio-cultural and family background of the participants seems to play an important hand in the present findings.*

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### Introduction

Antarctica, the southernmost continent. The coldest, driest and windiest continent with the highest elevation. An annual precipitation of approximately 200 mm. The temperature always freezing. No permanent residents. Still, about 4,000 people reside here scattered in various research stations of various countries. The Indian Antarctic Program initiated in 1981 and following the signing of the Antarctic Treaty in 1983 by India, Dakshin Gangotri and Maitri bases were established. The Indian Antarctic Program has conducted studies in the atmospheric, biological, earth, chemical and medical sciences in 30 expeditions as of 2010. The Twentieth Expedition to Antarctica flagged off from Cape Town, South Africa in 2000 with various scientific objectives such as study of ice thickness, coring of the lake bottom sediments, etc.

The conditions under which the expedition members work are in no way convivial, the extreme cold conditions, complete dark winter climate overcast conditions and erratic wind pressure (Adya, 1988; Johnson, 1985; Joshi, 1995), isolation from family and friends (Strange and Klein, 1973), interpersonal

conflicts and working conditions. The normal routine undergoes a drastic modification. Stress relieving agents such as family, friends and neighbors are not present anymore. Stress is the body's way of dealing with a challenge that has presented itself. Stress has been found to decrease immunity of an individual and make them susceptible to various physical illnesses e.g. common cold (Cohen, et al. 1997). The close quarters, augmented interdependence, monotony of the environment and absence of usual sources of emotional gratification lead to various reactions such as lowered concentration, insomnia, headaches, hostility, depression (e.g. Haythorn and Altman, 1967; Mulin, 1960; Nardini, 1962; Rohrer, 1961) in the members of the various expeditions. Chronic stress and a perceived lack of resources often leads to development of psychological conditions that impair functioning Schlotz, et al., 2011). Permanent changes in physiological, behavioral and emotional responses can occur in an individual when they remain under chronic stress (Jeronimus, et al., 2014; Cohen, et al., 2007). Selye (1956) and Lazarus's (1966) work gave impetus to the concept of environmental stress.

The researcher undertook the following objectives:

1. To measure the levels of stress in the members of the 20<sup>th</sup> Indian Expedition at Antarctica.
2. To analyze the correlation between various stressors.
3. To study the sexual behaviors of the members.
4. To assess the loneliness experienced by the members.
5. To assess the anxiety experienced by the members.
6. To understand the coping mechanisms employed by the members of the expedition to combat stress, if any.

### Sample

The sample for the study consisted of 48 subjects (male members = 47; female members = 1) who belonged to the 20<sup>th</sup> Indian Scientific Expedition (2000-2001) who stayed at the Indian Base in Antarctica on the summer duty. The subjects resided in Antarctica for a period of 3 months. The age of the members ranged from 23 years to 57 years and the mean age of the respondents was 37.58 years. 43.7% team members had educational qualifications above post graduation, 21.2% were graduates in various streams, 15.6% were higher secondary educated, 15.6% were 10<sup>th</sup> class educated and 3.1% were diploma holders.

### Tools

#### Stress Scales

The scales to measure stress levels of the members of the expedition were developed by the researcher himself. These scales were Scale of Existential Stress (SES) which measures stress related to aesthetics, beliefs, significance of life, etc.; Scale of Achievement Stress (SAchS) which measures stress related to achievement; Scale of Academic Stress (SAS) which measures stress related to academics and

work; Scale of Self Concept Stress (SSCS) which deals with how the social actions of others affects one's self esteem; Scale of Physical Stress (SPS) which measures the stress caused due to the physical strain of the harsh Antarctic conditions; and Scale of Family Stress (SFS) which assessed stress levels caused due to worries related to the family back home.

#### Sinha's Comprehensive Anxiety Test

The test has been designed and developed by Sinha and Sinha (1995) to assess the anxiety levels of adolescents and adults. The scale consists of 90 items. The reliability of the test by the test-retest method was found to be 0.85 & the coefficient of correlation was found to be 0.62 when validated against Taylor's Manifest Anxiety Scale.

#### Perceived Loneliness Scale (L-scale)

The scale was developed by Jha (1997) and intends to measure the levels of loneliness in adolescents and adults. The scale consists of 36 items. The reliability of the scale was found to be 0.65 by the Kuder-Richardson formula and the coefficient of correlation was found to be 0.59 when validating against Sinha Anxiety Scale indicating concurrent validity.

#### Sexuality Scale

The sexuality scale was developed by the researcher with the aim of studying the appropriateness of sexual behaviors of the members while on the expedition.

### Procedure

Once the members of the expedition had settled down, and their duties and responsibilities had been allocated, then they were explained the purpose of the study being conducted and their consent was recorded. Then, the administration of the various scales was done, one scale at a time. Separate files were maintained for each subject which was coded by the respondents themselves. The investigator also maintained a personal observation diary

where daily observation records were maintained.

### Results and Discussion

Hard conditions to live in can cause a high degree of stress. The researcher used six stress scales to assess the stress of the members of the expedition. The mean stress scores are depicted in table 1. The mean values indicate that the members experienced the lowest level of stress in existential area and highest in the achievement area. However, the mean stress scores correspond to low levels of stress. It is natural to experience comparatively higher levels of stress in the achievement area as the expedition itself was achievement-oriented. All members of the expedition had joined with an aim to fulfill some objectives, and given the short time period, it was necessary to fulfill

these goals in a time-efficient manner. Being a part of such an important expedition and being able to contribute to the knowledge base about the ice-covered Antarctica may be the reason behind the evidence showing low levels of existential stress. Furthermore, belonging to a culture where interpersonal bonding is highly stressed upon can be another reason why existential stress is experienced less. Research indicates that the type of stressor (acute or chronic) and individual characteristics such as well-being and age before the onset of the stressor play a major role in the intensity of the stress that is felt and how it affects the individual (Schneiderman, et al. 2005). Probably, the support system that is present back home as well as the support and cooperation exhibited by the members of the expedition serves as a major factor in dealing with the stressful condition.

**Table 1 showing mean stress scores in various areas**

Scales	Mean	S.D.
SES	20.23	5.368
SAchS	26.65	6.515
SAS	23.21	4.612
SSCS	22.02	6.369
SPS	20.69	6.133
SFS	20.98	4.159

The stress profile was also studied by calculating bivariate correlation. The results of the correlational analysis are presented in table 2. Inspection of the correlation coefficients obtained demonstrates that all stress variables were significantly and positively correlated with each other. The strength of the relationship between the six areas of stress has been found to be significant at 0.01 level of significance indicating that each area of stress under study was strongly correlated to the other areas. Conditions at Antarctica seems to have an effect on the relationship of the various aspects of stress. Life values, living conditions, work,

mutual support, achievement, self-concept, finances, all aspects of life are inter-related and create stress. Any alteration in the support, achievement or life values does create stress in an individual (Haythorn and Altman, 1967). A massive change such as moving to Antarctica is natural to cause stress in any individual where he needs to deal with not just harsh physical climate but he needs to deal with the absence of close ones as well as the intrusion of new people in life.

**Table 2 showing correlation among the stress variables**

	SES	SAchS	SAS	SSCS	SPS	SFS
SES	-	0.642**	0.567**	0.658**	0.389**	.403**
SAchS		-	0.693**	0.670**	0.579**	0.447**
SAS			-	0.625**	0.620**	0.716**
SSCS				-	0.620**	0.630**
SPS					-	0.704**
SFS						-

\*\* significant at 0.01 level of significance

To understand the sexual behaviors of the expedition members, data was collected with the help of the sexuality scale. The researcher was interested in finding out the behaviors exhibited by the expedition members to

compensate for the lack of the physical proximity of one's spouse/partner and the effect of the Antarctic conditions on one's sexual desires. The data obtained has been summarized in table 3.

**Table 3 showing thoughts and beliefs about sexuality**

S.No.	Thoughts and beliefs about sexuality	Response	Response Percentage
1	Sexuality in one's life	Important	90%
		Unimportant	10%
2	Sexual separation	Important	80%
		Unimportant	20%
3	Preparation for sexual separation (before expedition)	Adequate	70%
		Inadequate	30%
4	Sexual thoughts	Frequent	50%
		Infrequent	50%
5	Interference in work due to sexual thoughts	Frequent	30%
		Infrequent	70%
6	Masturbation	Right	60%
		Wrong	40%
7	Masturbation frequency in one month	0 times	6.7%
		1-3 times	40%
		3-6 times	40%
		More than 6 times	13.30%
8	Homosexuality	Right	13.3%
		Wrong	86.6%
9	Sexual functioning after the expedition	Improved	20%
		Unchanged	70%
		Decline	10%

Observing the responses given by the expedition members, it can be seen that the sexual behavior reported is appropriate. The culture that the expedition members belong to may play an important role in their sexual behavior. In the Indian value system, fidelity is considered very important in a relationship, whether it be on the husband's part or on the wife's. A majority of the members report that sexual separation is important and they need to prepare adequately before separation from the spouse. This preparation is probably what keeps the sexual thoughts at bay and seems to be the reason behind infrequent interference of sexual thoughts during work hours. Homosexuality has been looked upon as unnatural, and, so belonging to a conservative, traditional society, expedition members rejected the idea of having sexual relations with a member of the same sex. As masturbation is the only form of sexual release that they could indulge in, many report it in varying frequencies. Returning back to the loving folds of the family, they also report their sexual functioning remains mostly unchanged.

Extreme conditions, like those in Antarctica, could be a cause of major stress in individuals. The expedition members were all married and belong to an age group of 35 years and above. They were all probably married for a few years and so a total separation from their spouse for a short duration (which they were

already aware of would not have generated as much stress as it would have been in newly-weds).

An individual feels lonely when he desires interpersonal contact and lacks it or is unable to establish close relations. In a place like Antarctica, where there is only ice as far as the view goes, a person could feel increasingly lonely. While assessing the levels of loneliness in the expedition members, the loneliness scale was administered in association with observation of the expedition members by the researchers. The mean loneliness level was found to be low (table 4) indicating that the expedition members did not feel lonely in spite of the familial separation. The reason behind this may be the fact that they lived in groups of 12 people in each residential unit. Belonging to the same professional background, it provided them with a common ground to meet and interact. In addition to this, belonging to a collectivistic culture, where it is the duty of each individual to take care of the needs of those around them may have led to a sense of well-adjusted social integration. During the stay, the researcher's routine observations demonstrated that the interpersonal skills exhibited by the members did not indicate towards any inadequacy. Various studies (e.g. Parlee, 1979; Weiss, 1973) also indicate that a bond of friendship mediates the feeling of loneliness.

**Table 4 showing mean perceived loneliness and anxiety scores**

Scale	M	S.D.
Perceived loneliness	81.18	19.07
Anxiety	19.08	16.57

Anxiety is a basic component of stress. It is not just a symptom of stress but also acts as a further cause of stress (Girdano et al., 1990). Anxiousness could have been present looking at the severe living and working environment of the expedition members. However, it can be seen that the level of anxiety experienced by the members was low (table 4). It has been a long established fact that cultural background of an individual plays an important role in experiencing stress (Palsane et al., 1993). Belonging to a culture which has such a rich tradition of intimate social interactions, it was natural for the expedition members to feel less anxiety. In his observations, the researcher also saw the strong relationships established between the members.

### Conclusions

The results indicate that the members of the 20<sup>th</sup> Indian Expedition were not much vulnerable to the conditions of the Antarctic. The Indian value system seems to provide support to the members in these extreme conditions. The collectivistic culture and the values inculcated in Indian children teach them to be aware of people around them, to provide any support that is required and to lean on this support system when required. The members were raised in the traditional Indian system and hence these values are more strongly imbibed in their personalities.

Most of the members of the summer team were first timers and had not experienced the tough winters of the continent, which could have demonstrated differences in their profiling. Also, a more comprehensive profiling could not be done of the members who stayed in Antarctica over the winters. Dynamics of the interpersonal relationships, also, could have been studied more intensively which was not possible due to time constraints.

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