CHAPTER : II

METHODOLOGY

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2.1 INTRODUCTION : ISSUES AND OBJECTIVES

Research begins with curiosity and questions about a given phenomena or a set of phenomena. To get a satisfactory reply to these questions, attempts are made to understand and investigate the issues under question through appropriate tools. A psychosomatic study focusses on the psychosocial causes of a physiological dysfunction.

The present investigations focussed on a psychosomatic issue, namely effects of sex roles, general stress level and religion on menstrual distress among college girls.

As an exploratory study the present investigation focussed on the following issues and queries.

1. Whether there is a change from bipolar to orthogonal sex typing in our culture and whether this leads to a differential nature and pattern of menstrual distress among the different sex typed groups.

2. What is the general stress level of college girls and whether it affects their menstrual stress.?

3. In what way, the differences in the religious backgrounds affect the nature and pattern of menstrual distress.

4. Whether there exists any phase differences in the experience of menstrual symptoms and their severity with regard to sex roles, stress level and religion.

5. Which cluster of symptoms is most prevalent in college girls as determined by their sex role, stress level and religion.

6. Thus, the present study is guided by the need to bring out the differences if any in the experience of menstrual symptoms, menstrual phases, cluster of symptoms and severity of symptoms as determined by various sex roles, stress levels and religion.

7. What further conceptual and empirical work

could be, planned and carried out in order to improve the understanding of pattern and dynamics of menstrual distress with regard to sex roles, stress level and religion among college girls.

2.2 SPECIFIC PROBLEM UNDER INVESTIGATION

The main purpose of the present investigation was to conduct " a study of the effects of sex roles, general stress level, and religion on menstrual distress among college girls".

2.3 THE HYPOTHESES

From the queries stated above the following hypotheses are generated each followed by the statement of the specific null hypotheses to be tested in the present investigation.

(a) Menstrual Distress is a function of one's sex type i.e. the feminine, androgynous, masculine and undifferentiated sex typed groups of college girls would differ from each other in their nature and menstrual distress. Therefore, the null hypotheses to be tested would be

The feminine, androgynous, masculine and undifferentiated sex role groups do not differ with regard to the nature of Menstrual Distress.

(b) Menstrual distress is a function of one's general stress level i.e. persons with high and low general stress levels would differ from each other in their nature of Menstrual Distress. Therefore, the null hypotheses to be tested would be

The different general stress level groups do not differ with regard to the nature of Menstrual Distress.

(c) Menstrual Distress is a function of one's religious background i.e. Hindus, Muslims and Christians would differ from each other in the nature of their Menstrual Distress. Therefore the null hypotheses to be tested would be

The Hindus, Muslims and Christians do not differ with regard to the nature of Menstrual Distress.

(d) Menstrual Distress is a function of interaction between sex typing and general

stress level i.e. college girls belonging to the four sex role typology with high and low stress levels would differ in their nature of menstrual distress. Therefore the null hypotheses to be tested would be

The four sex typed groups with various stress levels do not differ in the nature of menstrual distress.

(e) Menstrual Distress is a function of interaction between sex typing and religion i.e. college girls belonging to four sex typed groups with different religious backgrounds would differ in the nature of Menstrual Distress. Therefore the null hypotheses to be tested would be

The four sex typed groups with various religious backgrounds do not differ in the nature of Menstrual Distress.

(f) Menstrual Distress is a function of interaction between general stress level and religion i.e. college girls belonging to high and low stress level groups with different religious backgrounds would differ in the nature of Menstrual Distress. Therefore, the null hypotheses to be tested would be

The various general stress level groups with different religious backgrounds do not differ in the nature of Menstrual Distress.

(g) Menstrual Distress is a function of interaction between one's sex role, general stress level and religion i.e. the feminine, androgynous, masculine and undifferentiated with high and low stress levels from Hindu, Muslim or Christian religious backgrounds would differ in the nature of Menstrual Distress. Thus the null hypotheses to be tested would be

The four sex typed group with high and low stress levels, from different religious backgrounds do not differ in the nature of Menstrual Distress.

2.4 THE VARIABLES

The meaning and psychological relevance of the major independent and dependent variables under investigations have been discussed in Chapter I. Here an attempt is being made to define the variables operationally in terms of their levels, types and functions.

(a) Independent variables :

The independent variables in the present research were as follows :

1. Sex roles
2. General stress level
3. Religion

1. Sex Roles

Sex typing is the process by which a society transmutes male and female (biological) into masculine and feminine (psychological). In the past, both in society and psychology masculinity and feminity have been conceptualized as bipolar ends of a single dimention. But, recent approaches view them as an independent orthogonal dimension. According to this dimension characteristics of masculinity and feminity can be measured in varying degrees in the same individual. Persons are considered to be sex typed to the extent they endorse a high degree of one set of characteristics in preference to the other. According to the orthogonal model of sex typing there are four sex role subgroups :

1.Androgynous	High masculinity,High femininity
2.Stereotyped	High masculinity,Low femininity (in males)
	Low masculinity, High femininity (in females)

3.Cross-sexed	High masculinity, Low femininity (in females)
	Low masculinity, High femininity (in males)
4.Undifferentiated	Low masculinity, Low femininity

In the present study these four sex role groups were taken with the assumption that women under these sex role subgroups will vary in the pattern and degree of menstrual distress. Thus, to study the effect of sex roles on menstrual distress, sex typing was taken as an independent variable in the present study.

No human biological event be it birth, death or menstruation occurs outside a cultural context of associated beliefs. The facts of the menstrual cycle are social facts as well as biological ones. There are a variety of important questions about menstrual symptomatology which needs to be investigated. One of these major questions is that how severe are woman's menstrual cycle symptoms ? Are there some subgroups of women with more severe and other subgroups with less severe or mild symptomatology. There have been some studies in the past in the West which have related menstrual cycle symptom complaints to attitudes about the menstrual cycle and to measures which attempt to assess women's acceptance of the feminine role (Moos, 1977).

With a current resurgence of the feminist movement in India, the woman's role too has undergone a drastic change more so for the Indian adolescent girl. Hence, a need was felt to study whether the Indian adolescent girls of different sex role subgroups vary in their experience of menstrual distress in terms of severity, symptoms and phases of menstrual cycle.

2. General Stress Level

Menstrual distress has been traditionally regarded as psychosomatic and it is known that both the cycle and the degree of symptom reporting are influenced by environmental factors. A great deal of evidence suggests that knowledge about situational factors enables one to predict a person's behaviour more accurately (Wilcoxon et.al. 1976). Environmental factors impinging on the individual may affect this physiological functioning more significantly than normal hormonal fluctuations (Horowitz et. al. 1977). There is some evidence in the menstrual distress literature to support this hypothesis. Western studies by Altman (1941) and Reynolds (1969) have shown that stressful environmental factors may be important variables in menstrual distress.

In adolescence, pubertal changes in bodily configuration stimulate a response from the adolescent's social milieu. This response defines many new roles for the adolescent, each with new responsibilities and rights. The demands of many of these roles create stress in the adolescence.
The adolescent response to these everyday stressors is the outcome of a complex interplay between behavioural and physiological factors.

A comprehensive model of stress is shown in Diagram NO.8. According to this model the stress at adolescence is initiate-dby Normative Developmental stresses and Unpredictable Life Events, mediated by preparation, timing, vulnerability to puberty and social supports. The outcome of the interplay of these forces bring out Physiological, Affective and Behavioural responses to the stresses at adolescence (Peterson & Spiga, 1982)

The present study focussed on life events stress as a stressor at adolescence as mediated by religion to study its effect on Menstrual Distress. thus the aim being, to prove whether menstrual distress is a pubertal physiological response to life events stress in Indian adolescents. Hence,

general stress level was included in the study as an independent variable to find out whether Indian adolescent girls with high stress level and low stress level varied in the degree and pattern of menstrual distress.

3. Religion

Recent approaches to menstrual cycle research suggest that cultural and religious beliefs play an important role in the study of menstruation (Gunn, Ruble 1980). Beliefs about menstruation are acquired at an early age and these beliefs usually reflect the general cultural stereotypes about menstruation as negative and symptom laden phenomenon. Western studies have shown that adolescent females when asked to describe their reactions to their menstrual cycle expressed typically negative feelings (Woods, Dery and Ada 1982). In India where there are numerous religious sects, the adolescent girls are brought up in various cultural atmospheres and in the process acquire various beliefs and myths regarding menstruation. At the same time, it is also being found that with the current emphasis on liberal femininism in our society, Indian girls at adolescence are discarding the age old traditions of observing isolation during menstrual cycle and no longer have a negative attitude towards it. The

menstrual experience differs from the typical pain experience because of associated cultural inhibitions, and stereotypes which affects the actual perception of menstrual cycle. Since the present study involved a study of effect of sex roles on menstruation a need was felt to study the effect of religion as a mediator on menstrual distress. Three major religious sects viz. Hindus, Muslims and Christians were selected to study the effect of this variable on menstrual distress.

Thus, religion was included in the study as an independent variable to find out whether religious sects vary in the degree and pattern of menstrual distress and if so, whether more traditionally oriented women with feminine sex typing differed in the degree and pattern of menstrual distress from the liberal women with androgynous, cross sexed or undifferentiated sex typed women.

(b) Dependent Variable

Menstrual Distress was taken as a dependent variable in present study. The conceptual and theoretical aspect of this issue has been discussed in detail in Chapter : I.

Scientists who have studied the psychology of human female reproductive system have looked exclusively to biological causes of any phenomena being investigated. A review of psychological research on menstruation both in West and India does not give an adequate picture of the women's experience because investigators have been limited by their beliefs that a woman's biology is closely related to her destiny as a social being (Longlaws, 1979). The fact that not all women experience menstrual distress, emphasizes the complexity of the phenomenon and the potential for interactions of physiological, psychogenic and cultural variables. The biological and social meanings of the menstrual cycle are inextricably interwined and joined in creating the psychological causes of menstrual distress (Weitz, 1977).

Thus the simple reason to take menstrual distress as a dependent variable in the present study was to throw some light on the psychosocial aetiology of menstrual distress. It was hoped that with an insight into the psychosocial causes of menstrual distress, it will be possible to adopt new treatment procedures for menstrual distress based on these psychosocial variables such as moderation of stress level, cultural beliefs and changes in sex

role orientation. It was also felt that results of this study could be helpful to guide parents and teachers of adolescent girls in imparting knowledge about menstruation more scientifically, with less emphasis on cultural myths and beliefs, to prepare them for their first cycle, create positive attitudes for menstruation, and also to cope more effectively with everyday life stresses. All this can help an Indian adolescent girl to reduce her menstrual distress.

2.5 THE SAMPLE

The original sample for this study consisted of 2000 female students from the Faculties of Arts, Science, Technology, Commerce, Medicine, Social Work and Fine Arts of The M.S.University of Baroda, Vadodara, Gujarat University of Ahmedabad, Sardar Patel University of Vallabh Vidyanagar, Anand and Surat University, Surat. The age range was from 19-22 years. All the students belonged to the first year of specialization in their chosen academic areas. The specialization (Major) starts at the third year. All the students, except the Home Science students were in their third year of the University study. In case of the Faculty of Home

Science, specialization starts at the fourth year hence all the Home Science students were in their fourth year but all of them were within the same age range of 19-22 years. As per the requirements of the present study the sample selection was made with the following considerations :

1. All subjects were taken only from three religious sects - Hinduism, Islamism and Christianity.

2. None of the subjects suffered from physical or psychological illness or any gynaecological complications.

3. None of the subjects was married.

4. None of the subjects used oral contraceptives

5. All the subjects should have a regular menstrual cycle for 6 months before the conduction of this study.

6. All the subjects were of Indian nationality. No foreign students were included in this study.

The total sample of 2199 female students were equally drawn from the three religious groups of Christians, Hindus and Muslims, each group comprising of 733 students. However, all the 2199 cases were not included in the actual study. 205 cases were eliminated due to reasons like incomplete questionnaires, married status, use of oral contraceptives or any gynaecological complaints or complications (9.32% of the total original sample of 2199 cases were excluded). Hence, the sample considered for the study comprised of 1994 cases in total.

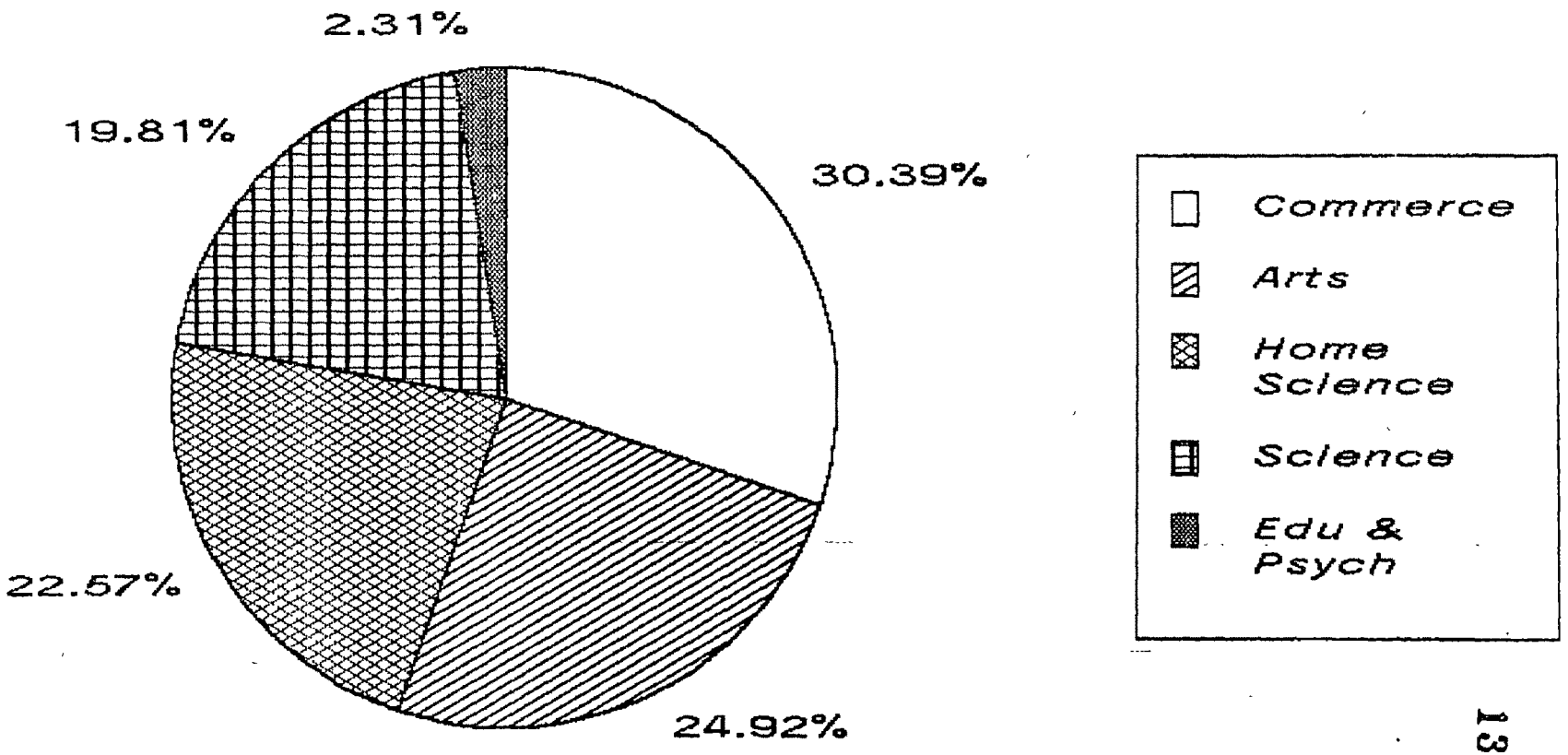
TABLE : 1

Distribution of the original sample and the selected sample

Faculties	Original Sample	Selected Sample	Excluded Cases
1.ARTS	N = 535	N = 497	N = 38 % = 07.10
2.COMMERCE	N = 727	N = 606	N =121 % = 16.64
3.SCIENCE	N = 415	N = 450	N = 20 % = 4.82
4.HOME SCIENCE	N = 472	N = 450	N = 22 % = 4.66
5.EDU.& PSYCHOLOGY	N = 50	N = 46	N = 04 % = 8.00
TOTAL	**2199**	**1994**	**205**

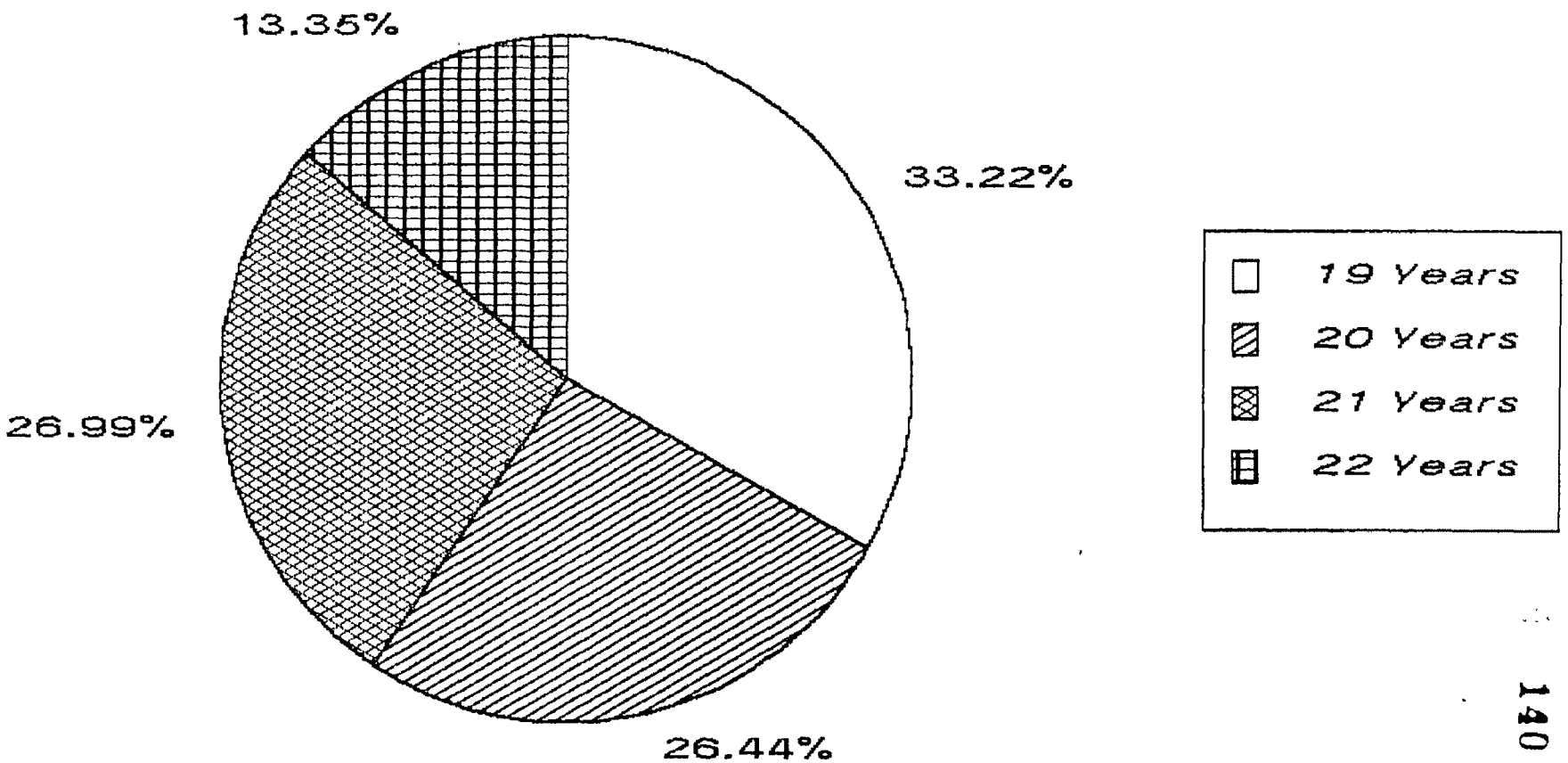
GRAPH - 2

A Pie Diagram Showing Sample Distribution In Terms Of Various Educational Streams



GRAPH - 2.

A Pie Diagram Showing Sample Distribution In Terms Of Age



GRAPH -3

A Pie Diagram Showing Sample Distribution In Terms Of Family Income

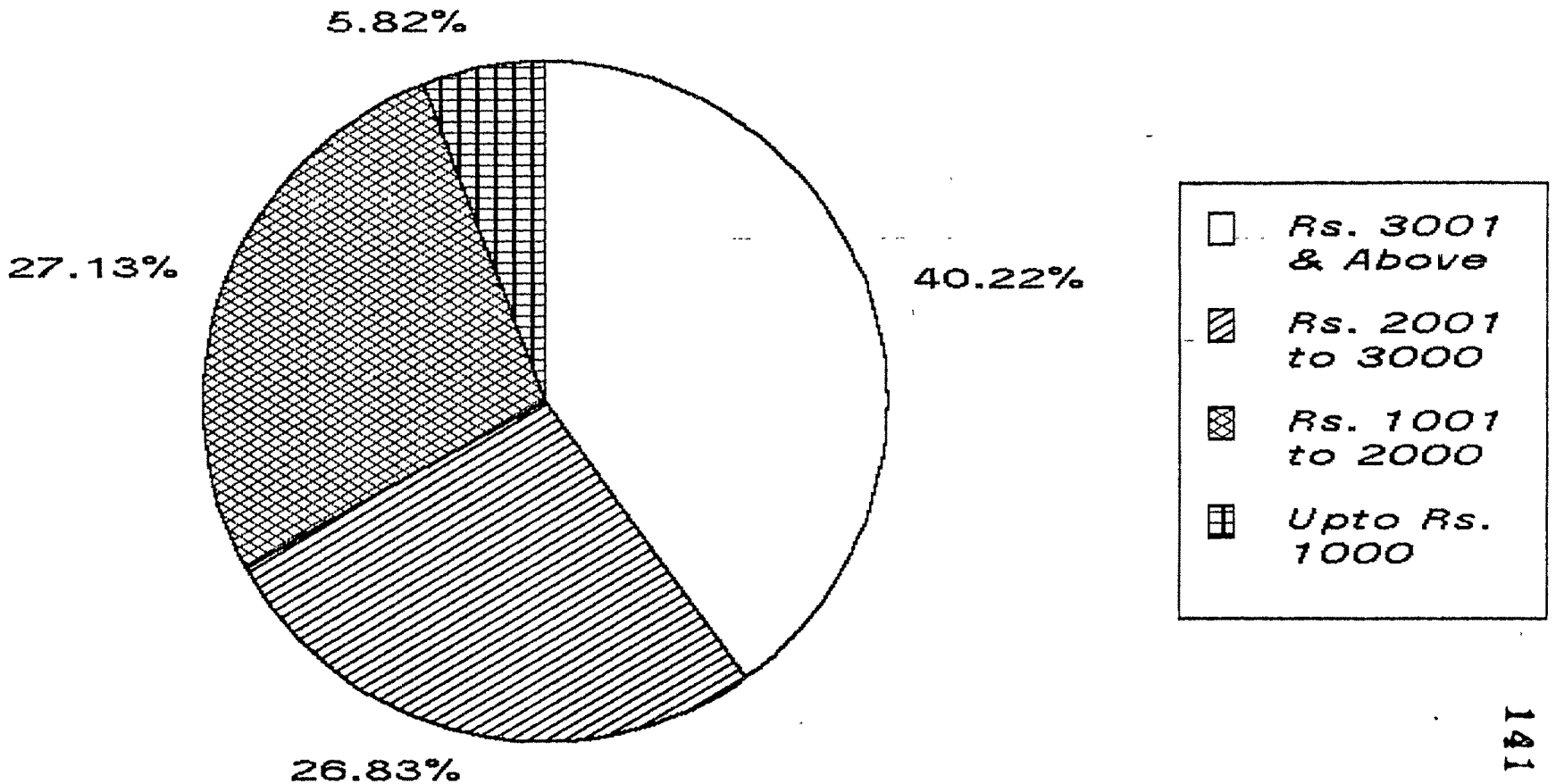


Table 1 shows the number of cases in the original sample and the number of cases excluded from and included in the present study. This table also gives a good estimation of the pattern of distribution of the sample in the faculties of Arts, Commerce, Science, Home Science, Education & Psychology.

Table : 2

Distribution of sample in three religious groups

RELIGIOUS GROUPS			TOTAL
CHRISTIANS	HINDUS	MUSLIMS	
N = 668	N = 685	N = 641	N = 1994
% = 33.50	% = 34.35	% = 32.15	

Table 2 shows numbers and proportions of Christian, Hindu and Muslim students in the selected sample.

In accordance with the requirements of the sex role typology used in the present study, (see chapter 1 and under independent variable) four sex-typed groups, Androgynous, Masculine, Feminine and Undifferentiated had to be identified and selected according to the median split quadrant scoring of masculinity femininity scores on BSRI.

GRAPH-4

A Pie Diagram Showing Sample Distribution In Terms Of Religion

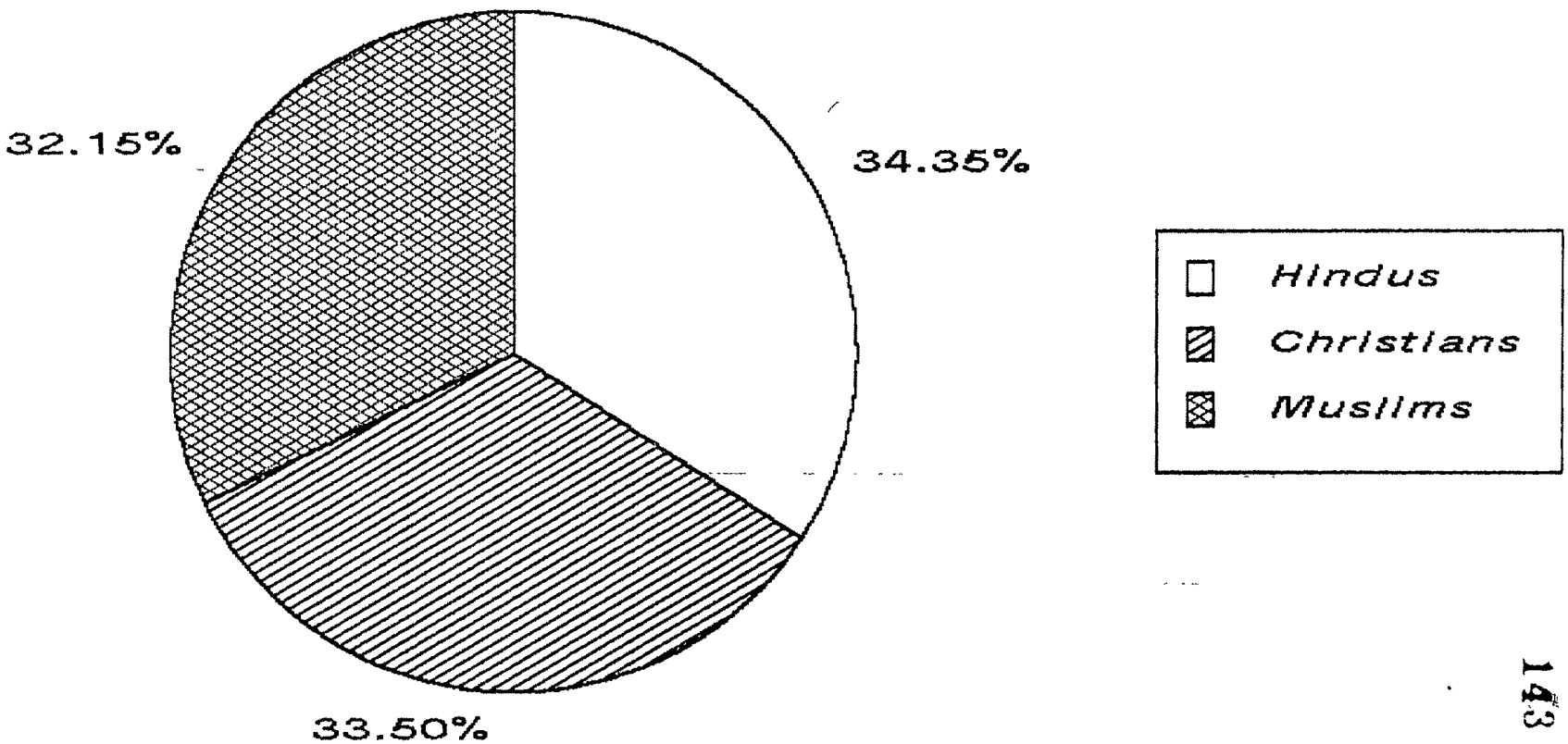


TABLE : 3

Distribution of sample for four sex-typed groups

SEX-TYPED GROUPS				TOTAL
Androgynous	Masculine	Feminine	Undifferentiated	
N = 689	N = 330	N = 326	N = 649	N = 1994
% = 34.55	% = 16.55	% 16.35	% = 32.55	

Table 3 shows the numbers and proportions of cases in the four sex-typed groups in the selected sample.

In accordance with the requirements of the general stress level categorization used in the present study (see Chapter : I and under independent variable) two stress level groups, high stress level and low stress level had to be identified and selected according to the median split scoring of scores on The Life Events Scale.

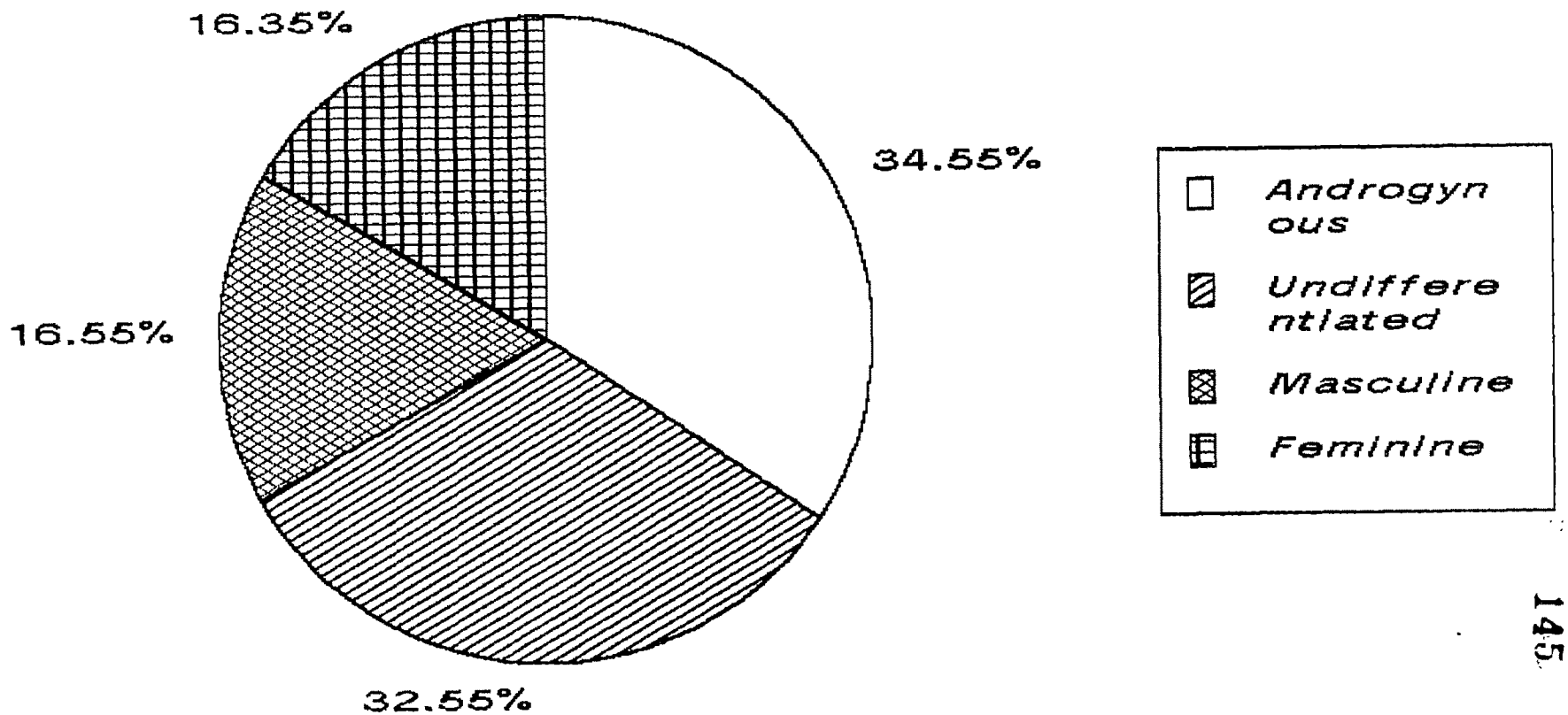
TABLE : 4

Distribution of Sample for two general stress level groups

GENERAL STRESS LEVEL GROUPS		TOTAL
HIGH STRESS LEVEL	LOW STRESS LEVEL	
N = 1086	N = 908	N = 1994
% = 54.46	% = 45.54	

GRAPH - 5

A Pie Diagram Showing Sample Distribution In Terms Of Sex Typing



A Pie Diagram Showing Sample Distribution In Terms Of General Stress Level

GRAPH - 6

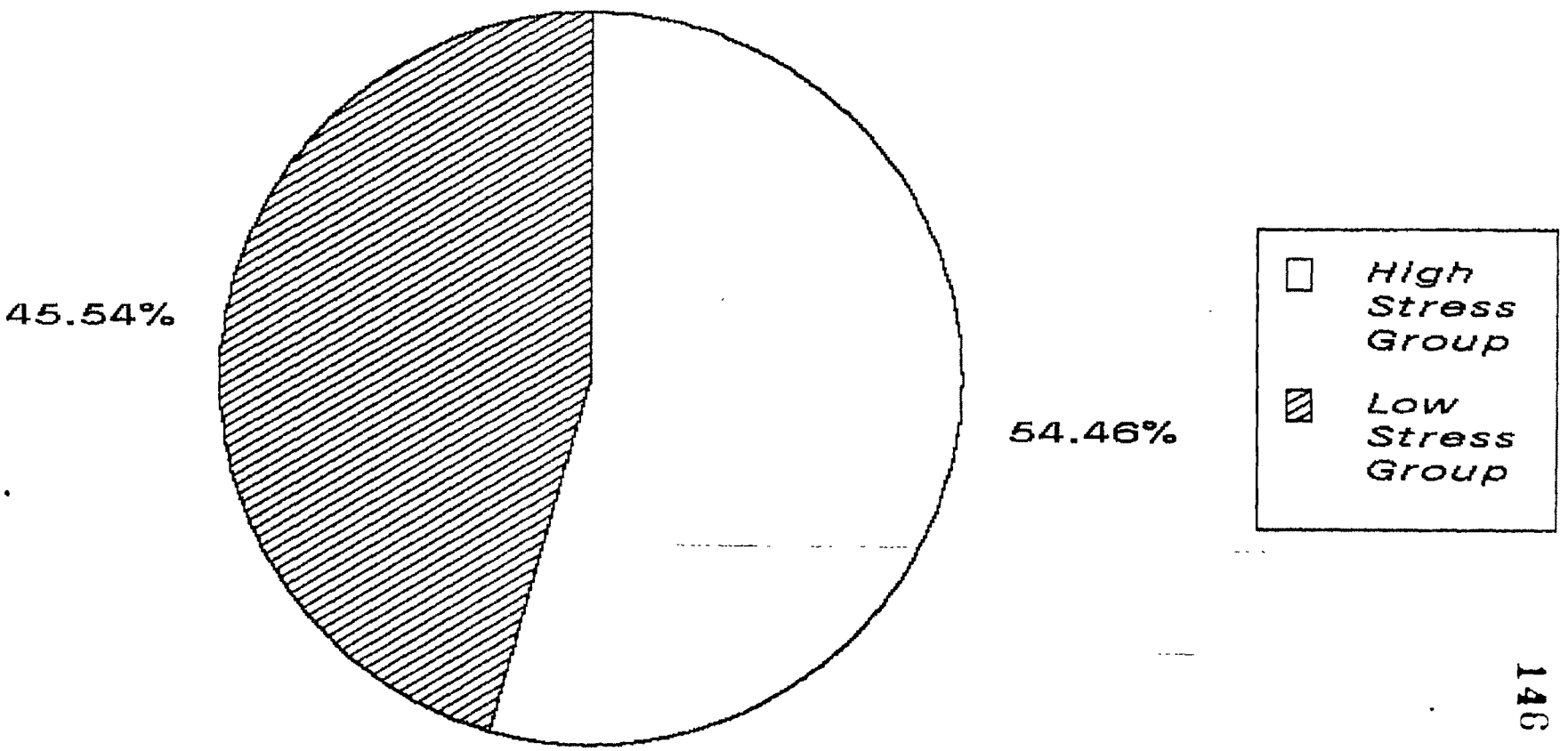


TABLE : 5

Distribution of sample for three religious groups and four sex typed groups

RELIGIOUS GROUPS	SEX TYPED GROUPS ANDROGYNOUS	MASCULINE	FEMININE	UNDIFFEREN-TIATED	TOTAL
CHRISTIANS	N = 236 % = 35.33	N = 121 % = 18.11	N = 107 % = 16.02	N = 204 % = 30.54	N = 668 % = 33.50
HINDUS	N = 251 % = 36.64	N = 99 % = 14.45	N = 117 % = 17.08	N = 218 % = 31.82	N = 685 % = 34.35
MUSLIMS	N = 202 % = 31.51	N = 110 % = 17.16	N = 102 % = 15.91	N = 227 % = 35.41	N = 641 % = 32.15
TOTAL	N = 689 % = 34.55	N = 330 % = 16.55	N = 326 % = 16.35	N = 649 % = 32.55	N =1994

HISTOGRAM SHOWING SAMPLE DISTRIBUTION IN TERMS OF SEX-TYPING AND RELIGION

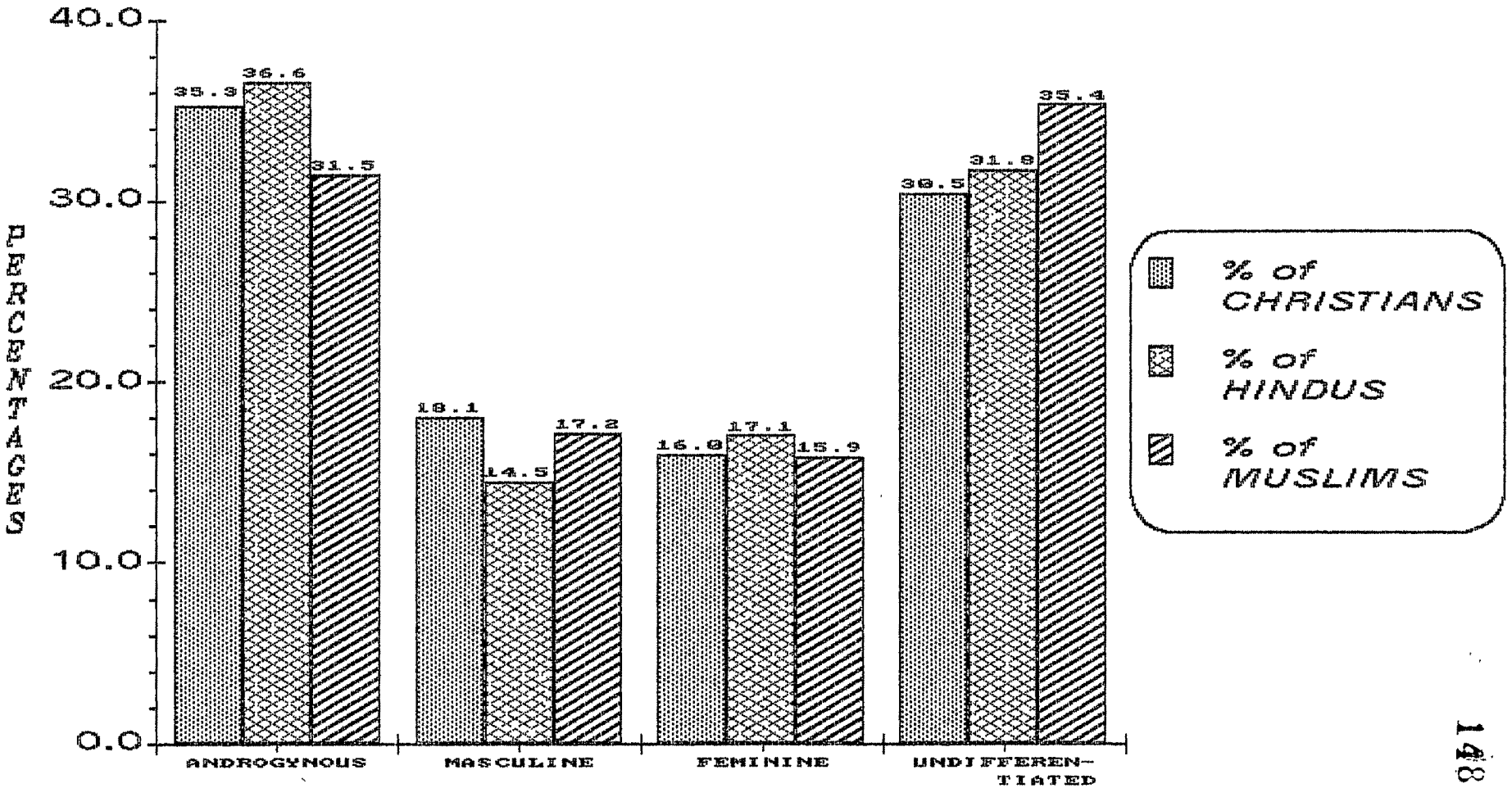


TABLE : 6

Distribution of sample for three religious groups and two general stress level groups.

Religious Groups	General Stress Level Groups: High Stress Level	Low Stress Level	Total
CHRISTIANS	N = 376 % = 56.29	N = 292 % = 43.71	N = 668 % = 33.50
HINDUS	N = 354 % = 51.68	N = 331 % = 48.32	N = 685 % = 43.35
MUSLIMS	N = 356 % = 55.54	N = 285 % = 44.46	N = 641 % = 32.15
TOTAL	N =1086 % = 54.46	N = 908 % = 45.54	N =1994

Table 6 shows numbers and proportions of cases for three religious groups, Christians, Hindus and Muslims in two general stress level groups.

GRAPH · 8

HISTOGRAM SHOWING SAMPLE DISTRIBUTION IN TERMS OF RELIGION AND GENERAL STRESS LEVEL

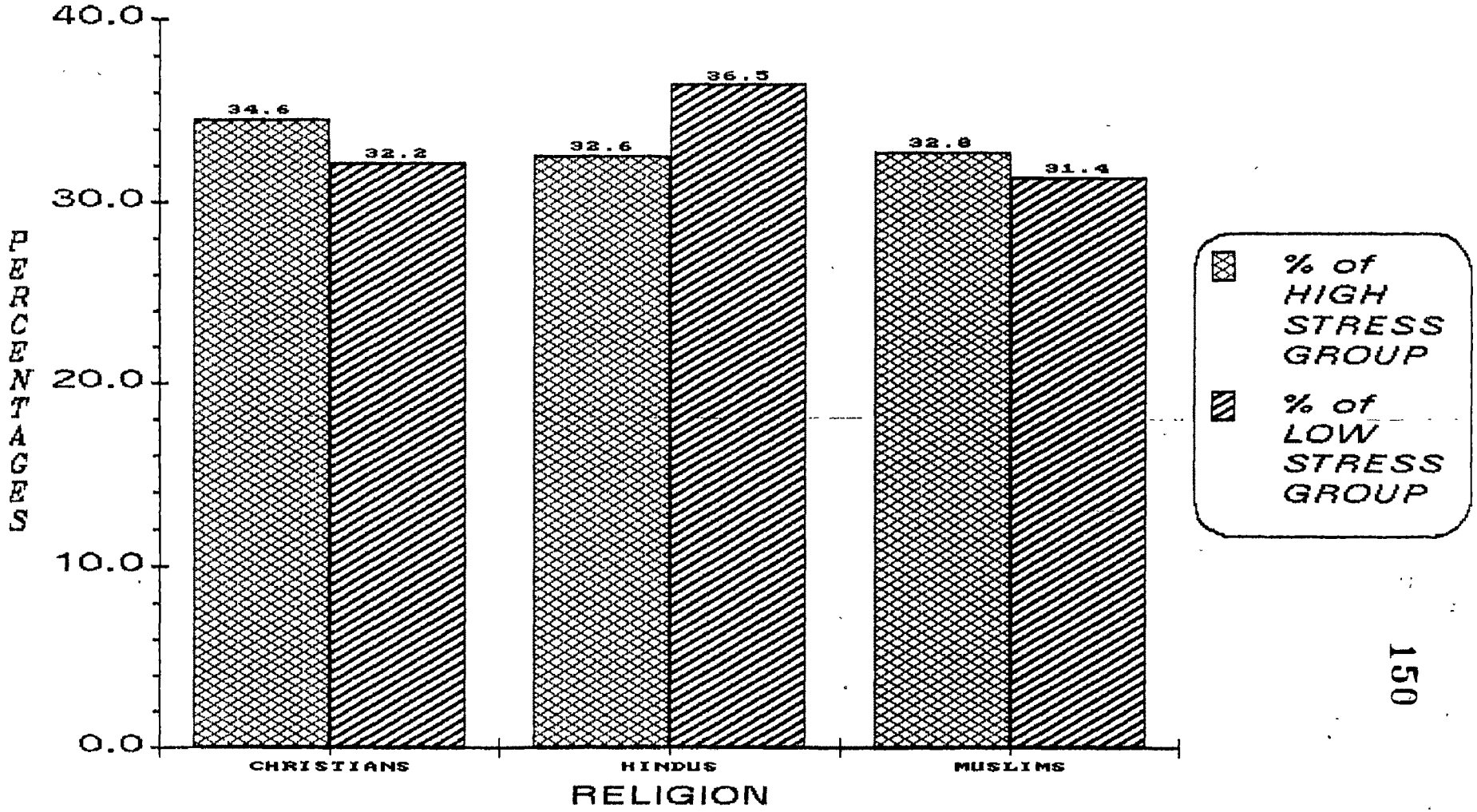


TABLE : 7

Distribution of sample for four sex-typed groups and two general stress level groups

Sex-typed Groups	General Stress Level Groups: High Stress Level	Low Stress Level	Total
ANDROGYNOUS	N = 367 % = 53.27	N = 322 % = 46.73	N = 689 % = 34.55
MASCULINE	N = 178 % = 53.94	N = 152 % = 46.06	N = 330 % = 16.55
FEMININE	N = 181 % = 55.52	N = 145 % = 44.48	N = 326 % = 16.35
UNDIFFEREN-TIATED	N = 360 % = 55.47	N = 289 % = 44.53	N = 649 % = 32.55
TOTAL	N =1086 % = 54.46	N = 908 % = 45.54	N =1994

Table 7 shows numbers and proportions of cases for four sex typed groups in two general stress level groups.

HISTOGRAM SHOWING SAMPLE DISTRIBUTION IN TERMS OF SEX-TYPING AND GENERAL STRESS LEVEL

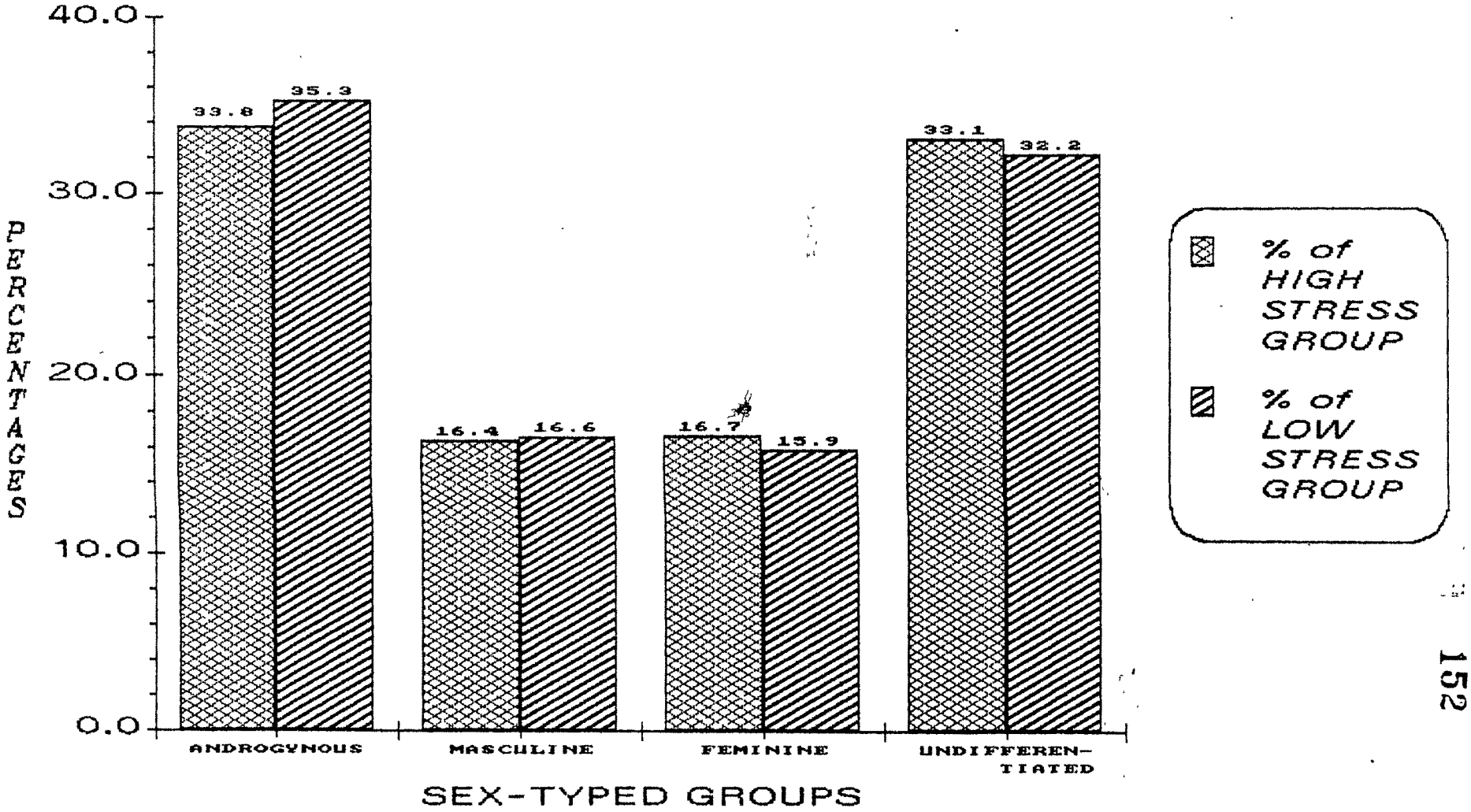


TABLE : 8

Distribution of sample for four sex typed groups, two general stress level groups and three religious groups

Religious Groups	Sex typed Groups: Androgynous		Masculine		Feminine		Undifferentiated		Total
	High Stress Level	Low Stress Level	High Stress Level	Low Stress Level	High Stress Level	Low Stress Level	High Stress Level	Low Stress Level	
CHRISTIANS	N = 117 % = 17.51%	N = 119 % = 17.81%	N = 78 % = 11.68	N = 43 % = 6.44	N = 63 % = 9.43	N = 44 % = 6.59	N = 118 % = 17.66	N = 85 % = 12.87	N = 668 % = 33.50
HINDUS	N = 140 % = 20.44%	N = 111 % = 16.20%	N = 47 % = 6.86	N = 52 % = 7.59	N = 62 % = 9.05	N = 55 % = 8.03	N = 105 % = 15.33	N = 113 % = 16.49	N = 685 % = 34.35
MUSLIMS	N = 110 % = 17.16%	N = 92 % = 14.35%	N = 53 % = 8.27	N = 57 % = 8.89	N = 56 % = 8.74	N = 46 % = 7.18	N =137 % = 21.37	N = 90 % = 14.04	N = 641 % = 32.15
TOTAL	N = 367 % = 18.41%	N = 322 % = 16.15%	N = 178 % = 8.93	N = 152 % = 7.62	N = 181 % = 9.08	N = 145 % = 7.27	N = 360 % = 18.05	N = 289 % = 14.49	N =1994

Table 8 shows the numbers and proportions of cases for four sex typed groups, two general stress level groups and three religious groups.

2.6 TOOLS

In the present study, the following tools were used :

1. Moos Menstrual Distress Questionnaire (MMDQ).
2. Bem's sex role inventory as adapted by M.Gon (1983) (BSRI).
3. Sarason's Life Events Scale as adapted by the researcher (1986) (SLES)

1. Moos Menstrual Distress Questionnaire

The Menstrual Distress Questionannaire used in the present investigation was developed by Rudolf H. Moos initially in 1968 to obtain retrospective and concurrent information about women's menstrual cycle experiences. This scale was then revised in 1969 and later in 1977 when several changes were made in the format and order of items in the questionnaire.

The revised version of the MMDQ is a self rating questionnaire consisting of clusters of symptoms. The MMDQ consists of two forms.

1.FORM C (Overall cycle)

2.FORM T (Today)

Form C allows a woman to describe her menstrual cycle symptoms in three phases of her most recent menstrual cycle.

Form T allows a woman to describe the menstrual cycle symptoms., she is experiencing on the day on which she answers the questionnnaire. This form is suitable for repeated assessments of symptoms, from the same subjects.

In the present study Form C of the MDQ was used as the tool to measure menstrual distress. The list of symptoms in this tool have been intercorelated and factor analyzed by Moos to give eight symptom clusters viz.

1. PAIN	Muscle stiffness, Headache, Cramps, Backache, Fatigue, General pains.
2. WATER RETENTION	Weight gain, Skin blemish, painful or tender breasts, Swelling.
3. AUTONOMIC REACTION	Dizziness, Cold Sweats, Nausea, Hot flashes.

4. NEGATIVE AFFECT	Loneliness, Anxiety, Mood Swings, Crying, Irritability, Tension, Feeling Sad, Restlessness.
5. IMPAIRED CONCENTRATION	Insomnia, Forgetfulness, Confusion, Poor Judgement, Difficulty in Concentrating, Distraction, Minor Accidents, Poor motor co-ordination.
6. BEHAVIOUR CHANGE	Poor school or work performance, Take naps, Stay in bed, Stay at home, Avoid Social activities, Decreased efficiency.
7. AROUSAL	Affectionate, Orderliness, Excitement, Feelings of well being, Bursts of energy, activity.
8. CONTROL	Feelings of suffocation, Chest pains, Ringing in ears, Heart pounding, Numbness, Tingling, Blind spots, Fuzzy vision.

Each of the eight factor scales is composed of an empirically inter related group of items. The labels of the scales have been chosen to reflect the item content as closely as possible. The pain

cluster is composed of symptoms usually associated with dysmenorrhea, while the Water Retention and Negative Affect scales include symptoms that are generally associated with premenstrual syndromes. The Autonomic Reactions and Impaired Concentration scales are composed of symptoms that are not described quite as frequently in the literature but are occasionally associated with menstruation. Behaviour change is made up of a familiar set of reactions that some women report in conjunction with their menstrual cycle. The Arousal Scale taps the **positive** reactions in relation to the menstrual cycle. The Control scale is composed of items that are endorsed quite infrequently. A high score on control scale reflects a tendency to report varied symptoms, even though they are not usually associated with menstrual cycle.

Thus the MDQ consists of three somatic clusters of symptoms placed together followed by three clusters that tap mood and behavioural changes followed by Arousal and Control clusters.

The 5 point rating scale of the MDQ ranges from 0 to 4 the descriptive categories being as follows :

0 = no experience of symptoms

1 = present, mild

2 = present, moderate

3 = present, strong

4 = present, severe

Thus, a woman who reports no symptoms on any cluster will get a score of 0. Each woman has to rate separately for each symptoms for menstrual, pre-menstrual and intermenstrual phases of her **most recent** menstrual cycle.

These phases of the menstrual cycle are described as below :

1.Menstrual phase = **Most recent** menstrual flow of the woman

2.Premenstrual phase = 4 days before the woman's **most recent** menstrual flow.

3.Inter-menstrual phase = during the remainder of the woman's **most recent** menstrual cycle.

SCALE INTERNAL CONSISTENCIES AND INTERCORRELATIONS

The internal consistencies of the eight MDQ scales in FORM C as derived by factor analyses, are moderate to high varying form.89 for Negative Affect to .53 for control using Kuder Richardson formula 20.

The average of internal consistencies on initial MDQ development sample of 839 calculated separately for menstrual and premenstrual phase scale ac ross for FORM C are given below :

SCALE	INTERNAL CONSISTENCIES (N = 839)(KR FORMULA 20)
Pain	.74
Water Retention	.67
Autonomic Reaction	.66
Negative Affect	.89
Impaired concentration	.82
Behaviour change	.73
Arousal	.72
Control	.53

The inter cycle consistency of women's menstrual cycle symptoms reports for FORM C was also found to be moderate to high.

2. The Sex Role Inventory :

The Sex Role Inventory used in the present study was developed by M. Gon, (1983) and is an adaptation of the Bem's Sex Role Inventory. It is based on the assumption of dualistic nature of characteristics culturally regarded as Masculine and Feminine (Constantinople 1973, Bem 1974, 1977; Kalpan & Bem 1976, Spence and Helmreich 1979) or that masculinity and femininity are orthogonal quantifiable dimensions which coexists within the same personality disposition . Consequently, unlike traditional bipolar scale (Spence & Helmreich 1979) the underlying theory of the present study required a methodology that would provide separate and continuous measures of Masculinity and Femininity with scale medians to create a four fold sex role typology (Penick et.al. 1980).

The Instrument development was based on the same principles as that of BSRI (Bem's Sex Role Inventory) and PRF ANDRO, and hence the present

inventory included provisions for (a) separate masculinity and femininity score (b) items selected on the basis of sex typed desirability in Indian context, (c) items with positive context.

Internal Consistency

In order to estimate the internal consistency of the Sex Role Inventory CRONBACH's COEFFICIENT ALPHA (α) was computed separately for the Masculinity Femininity and several desirable scores of the subjects. The coefficient alpha for masculinity = α = .78 and for femininity = α = .93. To compute the test of internal consistency, the following formula was used (Cronbach L.J.Essentials of Psychological Testing, 3rd ed. Harper, Row, London, P.161 - 1970).

$$\alpha = \frac{K}{K-1}\left(1 - \frac{\text{Sum } S^2 x\ i}{S^2 \times t}\right)$$

where S^2 is the variance of part score x_1 for each part in turn and S^2 is the variance of sum of K part scores.

The BSRI scale's validity against PRF Andro is

Masculinity = .68

Feminity = .80

The results showed that both the Masculinity and Femininity scores are highly reliable.

3. The Life Events Scale (as adapated by the researcher ,1986).

The life events scale used in the present study to measure general level of stress was developed by the researcher in 1986, and is an adaptation of the Sarason's life Experience Scale (SLES).

The original SLES is a 57 item self report measure that allows respondents to indicate events they have experienced during the past year. It consists of two sections : Section 1 (47 items designed for all respondents) and section 2 only for students (10 items) but while section 1 can be used only for subjects from general population, both sections can be used with students.

In the present research the adaptation was based on the same principles of the original SLES. In the adapted tool the SLES items were choosen to represent stresssful life events frequently experienced by student population. Items for the

scale were collected from 50 female students between the age range of 19-22 years by asking them to list 10 events which they experienced as stressful in the past one year. Many of the items are based on the SLES, others were included because they were judged by 9 out of 12 academicians to be events that occur frequently and that potentially might exert a significant negative impact on the lives of Indian girls experiencing them. About 21 of the event listed in the adapted tool are similar to the SLES (Sarason, Johnson & Siegel, 1978).

In the construction of this adapted life experience stress scale, however, certain changes have been made which are as follows :

1. Events not included in the SLES but included in the adapted tool are female items such as gynaecological complications, serious illness and injury of boyfriend or fiance, troubled relations with friends, separation from boyfriend, eve teasing, etc.

2. Many of the academic items for student sample are unique to this adapted tool.

3. Some of the SLES original events thought to be of little consequence for Indian female students such as change in church activities, detention in jail, etc. were not included in the adapted tool.

4. Items of the original SLES of positive or ambiguous nature such as engagement, change of residence, taking a loan, academic probation, changing a course, beginning a new school experience, etc. were also eliminated and in the adapted tool, items of negative nature which are events experienced as negative by the subjects were included.

5. Certain other events were reworded to fit the Indian context to simplify responding such as paying fines or dues on hostel bills, taking a drop in exams, family's pressure to leave education, etc.

Thus, the adapted life experience scale used in the present study to measure general stress level of Indian adolescent girls is a 45 item self report measure that allows the respondents to indicate stressful events which had a negative imact on them

during the past 1 year, plus three blank spaces in which the subjects can indicate other events with negative impact that they may have experienced.

The scale consists of negative stressful events designed primarily for use with Indian female students (as this research was conducted with female college students). The format of this adapted scale calls for the subject to rate the impact of the events experienced in past 1 year.

Ratings are on a 4 point scale from no impact(0) to extreme impact (3) A negative stress score can be derived by summing the impact ratings of those events experienced by the subject in the past 1 year. In the adapted tool, only negative impact ratings of stressful events were included though the SLES consisted of both positive and negative impact ratings of stressful events, on the basis of suggestions given in earlier studies (Vinokur & Selzer, 1975) that positive stress scores and total of both positive and negative stress scores are less predictive of health related variables than an index of negative stress scores. Since the present study focussed on the health related variable of menstrual distress only, negative ratings were included in the adapted tool of general stress level.

Reliability of the Life Events Scale

A test retest reliability study of the adapted LES has been conducted. It involved female students drawn from third year courses, with a 6 week time interval between test and retest. There were 150 subjects in this study. Responses for the negative impact ratings of stressful life events experienced in past year were scored. Pearson's product moment correlations were computed to determine the relationships between scores obtained at two testings. Test retest correlations for the negative impact ratings were .86 ($p < .001$).

The findings of this study suggests that the adapted LES is a highly reliable instrument with negative impact ratings of stressful events experienced by Indian female students in past 1 year.

2.7 The Procedure of data collection

The study was planned to be conducted in three phases and the procedure followed the same plan.

Phase I : Heads of different departments, in various faculties of the universities were approached for

making third year female students available (since they fall in the required age range of 19 - 22 years) for the purpose of present study.

Phase II: The groups of female students belonging to different departments were met in their regular classroom set up. The 7 page booklet containing all the three tests viz. MDQ, BSRI and LES scales in English as well as Gujarati was distributed after the necessary introductory remarks.

Married female students and those using oral contraceptives were excluded from the sample. Approximately 45 minutes were taken by the subjects to fill the test booklets. The subjects were asked not to discuss among themselves and the need for individual responses was stressed. Later, the test booklets were collected when the subjects finished filling them.

Phase III: After collection of the test booklets, duly filled in, the test booklets were scrutinized. Incomplete, wrongly filled booklets, cases who were married or using oral pills or with abnormal menstrual cycles and gynaecological complications and of any religious sect other than Christian, Hindu and Muslim were eliminated from the collected data.

2.8 Design and Analysis

To study the effects of different independent variables i.e. sex-typing, general stress level and religion and their interaction effects on menstrual distress, means, standard deviations and 4 x 2 x 3 analysis of variance for unqeual cell frequencies were computed.

In clinical and Social computed research, the number and nature of classification variables preclude selection of equal numbers of subjects for each combination of factors (Overall & Klett, 1972). In this research differential frequencies of occurence are an inherent feature and artificial stratification can have undesirable effects. The fact that a method of analysis yields conventional results in equal cell frequency case is not adequate justification for its use with unequal and disproportionate cell frequencies. (Overall and Spiegel 1969) give three least squares methods for analysis of experimental data which yield identical results when applied to equal-cell-frequency problems but different results in unequal-cell frequency problems. These methods are :

b) Hierarchical approach.

c) Classic regression approach.

In the classic experimental approach, all three types of components are made orthogonal to one another by imposing a certain hierarchy. The interaction component is defined as the difference between the sums of squares explained by the total joint effect of A and B and the additive effects of A and B. In other words, the interaction component is given by the residual components of the effects of A and B. The error component is likewise defined by the residual sums of squares.

Finally, one partitions the additive effects of A and B into separate main effects. The strategy of significance testing consists of the following :

1. Test the significance of the overall model (usually not performed).

2. Test the significance of interaction.

3. If interaction is not significant, test the significance of the additive model.

4. Test the significance of each main effect.

(a) General linear model analysis, a conventionalleast squares multiple regression solution in which each effect, whether it is main effect or interaction, is adjusted for relationship to all other effects in the model.

(b) Experimental design method which takes into account the experimental design heirarchy of main effects and interactions, adjusting each effect for all other effects at an equal or lower level and ignoring higher order effects.

(c) Step down analysis which depends on a prior ordering of all terms in the model, and each effect is adjusted only for those preceding it in the ordering.

The computer package SPSS, (Statistical Package for Social Sciences) in its subprogrmme ANOVA provides three approaches, similar to Overall and Spiegel's for factorial designs with unequal cell frequencies. These approaches are :

a) Classic experimental approach.

One important difference of this design from the orthogonal design is that if A and B are strongly associated, it is possible to have a result in which the additive effect as a whole is significant while neither of the individual main effects are significant.

The second approach, referred to as the hierarchical approach (using stepdown significance testing), is to partition to main effects in a hierarchical manner.

The sums of squares are decomposed hierarchically. The effects are not tested during the decomposition process. Rather, we wait until we have obtained the final MS error. Which reflects the variation remaining after all effects have been removed. We then cycle back through the effects, computing for each F ratio which has as its denominator the final MS error. The term **stepdown** refers to the process of recycling back.

In the classic experimental approach, sums of squares are decomposed hierarchically between types of effects. In the hierarchical approach, sums of squares are decomposed hierarchically between types

and also within the factor main effects. The procedure for significance testing is the same as in the classic experimental approach. The only difference is that if the additive effect is significant, at least one of the main effects will always be significant. These two approaches, the classic experimental approach and the hierarchical approach, may be extended to n-way factorial designs. Both approaches partition the SSy in the same way, except for the hanfling of the individual main effects. For example, given a three-way factorial design, both approaches initially partition SSy as indicated in the table below :

Classic and Hierarchical Partitioning of SSY for a Three way Analysis of Variance

1.	$SS_{A,B,C}$(main effects)
2.	$SS_{\text{two-way interaction}} = SS_{A,B,C,AB,AC,BC} - SS_{A,B,C}$
3.	$SS_{\text{three-way interaction}} = SS_{A,B,C,AB,AC,BC,ABC} - SS_{A,B,C,AB,AC,BC}$
4.	$SS_{\text{residual}} = SSy - SS_{A,B,C,AB,AC,BC,ABC}$
	SSy = total sum of squares = 1 + 2 + 3 + 4

They differ in the partitioning of the additive effects. These are shown in table below.

Partitioning of the Additive Effects of a Three Way Analysis of Variance

Source of Variation	Classic Approach	Hierarchical Approach
	$SS_{A,B,C}$= total additive effects	
A main effect	$SS_{A.BC}=SS_{A,B,C}-SS_{B,C}$	SS_A
B main effect	$SS_{B.AC}=SS_{A,B,C,}-SS_{A,C}$	$SSB.A=SSA.B-SS_A$
C main effect	$SS_{C.AB}=SS_{A,B,C}-SS_{A,B}$	$SS_{C.A.B}=SS_{A,B,C}-SS_{A,B}$

The third approach, referred to as the classic regression approach, partitions individual effects by adjusting for all the other effects. The characteristic of this approach is the examination of a given effect only after the effects of all the others (including interaction) are adjusted for.

In the present research, all three approaches were initially used to compute the 4 x 2 x 3 analysis of variance with unequal cell sizes. The results of all the three approaches showed F values which different minutely from each other. Consequently, the sources of variation, both main and interaction, which were found to be significant by one approach, were also found to be significant by the other two approach, were also found to be significant by the other two approaches. Sources of variation which found to be insignificant by one approach were also found insignificant by other two approaches. Thus, the significance of sources of variation was found to be consistent for all three approaches.

In the present research the classic experimental approach was selected finally since it is appropriate for social science research problems in which the factors do not have a known casual orders, but in which main effects may be assumed to be a higher priority than interaction effects (Overall and Spiegel, 1969).

The 4 x 2 x 3 analysis of variance took into consideration 4 levels of sex typing (Androgynous Masculine, Feminine and Undifferen-

tiated); 2 levels of general stress level, (High and Low) : and 3 groups of religion (Christians, Hindus and Muslims).

It was planned to look for the following statistical analysis of the date.

(i) Means and standard deviations of the menstrual distress scores for all the eight symptom clusters in all three phases of menstrual cycle separately for sex typing, general stress level and religion and also irrespective of these variables.

(ii) 4 x 2 x 3 ANOVAS with menstrual distress scores for all eight symptom clusters for all three phases of the menstrual cycle. Thus, in all 24, 4 x 2 x 3 ANOVAS were to be computed. The significant mean differences, using gap test or test of Least Significant Differences, which will further reveal the direction of the source of significance.

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