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Prevalence of Depression and its Contributing Factors

Hishey Lamu Bhutia[1], Barkha Devi[2]

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ABSTRACT

Introduction: Adolescence represents a critical phase of development and is characterized by major changes in all areas of human life; physical, emotional, spiritual, cognitive and moral. Depression has been found to be the most common psychiatric disorder among adolescents.

Methods and materials: A survey approach with a school based cross-sectional design was adopted. Convenient sampling was used to select the main setting (Udupi block); random sampling was used to select the schools, PUCs, & students. The data collection tools used comprised of demographic proforma, Beck Depression Inventory-I, Factors contributing to adolescent depression questionnaire and scale, Rosenberg's self-esteem scale.

Statistical analysis: Data collected were analyzed using SPSS version 16 by computing the descriptive and inferential statistics.

Results: The main findings of the study show overall prevalence of adolescent depression was 44%. Depression was found to be significantly associated with gender (r=4.69, p=0.030), family history of depression or any mood disorders (r=30.81, p<0.001), presence of any illness (r= 23.692, =p<0.001), stressful life events (r=80.183, p<0.001), loss of someone close (r=1.107, p<0.001) and failure in final examinations (r=41.906, p<0.001). There was no association of adolescent depression with age. Depression was found to be negatively correlated with self-esteem (r=-0.794, p<0.001), anxiety (r=-0.729, p<0.001) and confidence (r=-0.760, p<0.001). Depression was found to have a significant negative correlation with family relationships (r=-0.700, p<0.001), peer relationship (r=-0.575, p<0.001) and relationship with teachers (r=-0.589, p<0.001). Depression was found to be independent of the selected demographic variables as class of study, age, religion, type of family, parental marital status, parental occupation, and annual income. However, there was a significant association between depression and father's education (r=57.21, p<0.001), and mother's education (r=23.62, p=0.003).

Conclusion: The community health department may extend their services to the school by planning adolescent health education on prevention and identification of depression. Further exploration of factors contributing to adolescent depression may be conducted through qualitative research.

Keywords: Depression; Adolescents; Adolescent Depression; Adolescent Anxiety; Adolescent Health.

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INTRODUCTION

Adolescence represents a critical phase of development and is characterized by major changes in all areas of human life; physical, emotional, spiritual, cognitive and moral. Metaphorically it is like a bridge that transits an individual from a

tender childhood to fully mature adulthood. It is a turbulent period for a child, where she or he is faced with many unexpected and dramatic changes in all areas of development. It is the time when a fully dependent child exercises his autonomy by trying to separate from the care giver. Thus, this period is of immense value in the life of every individual, for it is the foundation that shapes the future of every child. This period of growth and development is not bereft of hurdles and obstacles. Adolescents encounter numerous concerns related to physical, emotional, social, moral and spiritual dimensions of life. Amongst the major concerns of adolescence, issues related to depression, as a common psychiatric problem is on the rise. They need to be thoroughly guided and screened as depression negatively impacts growth and development.

Depression is the most important global public health problem because of its relatively high life time prevalence and the significant disability it causes[1]. In 2002, depression accounted for 4.5% of the world-wide total burden of disease, in terms of disability adjusted life years.

By the year 2020, depression will be the second most common health problem in the world, second to Ischemic Heart disease[1]. Lifetime prevalence rates rise to 14% for adolescents 15 to 18 years of age, from an average of less than 3% in any given point in time. About 3% to 8% of adolescents face major depressive disorder, making it more common than asthma or other medical diseases in this age group.[2]

Depression in children and adolescents' manifests as a combination of feelings of sadness, loneliness, irritability, worthlessness, hopelessness, agitation and guilt. It may also co-exist with other disorders as anxiety, social withdrawal, somatic difficulties, phobias and obsessive compulsive disorders. The externalizing disorders that occur with depression are conduct disorder, oppositional defiant behavior, hyperactivity, and substance abuse disorders. A diagnosis of major depression requires that the symptoms be present for two weeks or more.[3] These symptoms can be detrimental at times leading to major depression and finally suicide.

Depression in children was an incredible occurrence 40 years ago. However, a growing body of evidence has confirmed that children and adolescents not only experience the whole spectrum of mood disorders but also suffer from the significant morbidity and mortality associated with them. Unfortunately, depression in children usually goes undetected as parents or significant others attribute the depressive symptoms to some mood swings, common in adolescence. Thus, under diagnosis and under-treatment further enhances the incidence of major depression among the adolescents which may be later associated with serious psychiatric problems. More than 70 percent of children and adolescents with depressive disorders do not receive appropriate diagnosis and treatment.[4]

Adolescent depression has many negative consequences. It may inadvertently affect the teen's socialization, family relations, and performance at school and suicidal ideations, often with potentially serious long-term consequences. They are at risk for increased hospitalizations, recurrent depressions, psychosocial impairment, alcohol abuse, and antisocial behaviors as they grow up. The most devastating outcome of concern for adolescent depression is suicide, the third leading cause of death among older adolescents (Center for Disease Control).[1] Depressive disorders are the most common diagnosis present in all suicides. In 2001, there were 1, 833 cases of suicides in children and adolescents 10 to 18 years of age, and in 2000, suicide was the third leading cause of death among those 10 to 19 years of age.[3,4,5]

Numerous studies conducted globally and nationally have shown progressive increase in the prevalence of depression among adolescents. Sundet. al, investigated the prevalence and characteristics of depressive disorders in early adolescence in Central Norway in 2011. They found that almost one in four subjects (23%) had lifetime depression. Prevalence of Major Depressive Disorder was 2.6%, followed by dysthymia accounting for 1% of the subjects.[4] This implies the growing concern for recognition and timely treatment of depressive symptoms quite early in life.

The researcher could not trace precise information on the national statistics related to prevalence of depression in adolescents. Nevertheless, studies have been conducted in different parts of the country, providing the scenario in few states.

In India, as reported by the National Institute of Mental Health and Neurosciences, Bangalore, 2010, suicide rates have been increasing by 5-10% every year. Major depressive disorder is the cause commonly associated with suicide in adolescents. The autopsy records of a hospital in Delhi revealed that the commonest age group involved in these suicide cases was between 15 to 18 years of age. National data shows female predominance in suicide cases. The common factors were recognized as depression resulting from academic failure, family conflicts, romantic relationships, illnesses

and poverty.[5]

According to the systematic review by Grover et al. in India, many studies have estimated the overall prevalence of depression in community samples to range between 1.7 to 7.4 per thousand population.[6] The meta-analysis carried out by Reddy and Chandrasekhar, that included 13 studies on epidemiology of psychiatric disorders including 33572 adolescents from the community in India, reported the prevalence of depression to be 7.9 to 8.9 per thousand populations and the prevalence rates were nearly twice in the urban areas.[7]

Based on various prevalence studies conducted in our country, the prevalence of depression has been shown to vary between 18.4% to 79.2% among the adolescents.[8-11] The figure is quite alarming, as these adolescents represent the segment of population whose symptoms usually go unrecognized or under treated. The authors emphasize the importance of understanding the prevalence of adolescent depression for appropriate screening strategies and treatment.

Depression has been found to be the most common psychiatric disorder among adolescents. The World Health Organization has also taken an initiative to address the issue of depression as a global crisis by adopting it as the theme for this year's World Mental Health Day. Prevention of depression by early identification and screening is of paramount importance to put a stop to the ever-increasing menace of suicide that is gripping our nation. The information on prevalence of depression in adolescents will help in identification, screening and appropriate management at the earliest. It is often associated with suicide, a phenomenon that is on the rise among adolescents in India in recent times. However, depressive symptoms are an unrecognized problem among adolescents that necessitate the need for recognition. Thus, understanding the prevalence of depressive symptoms among adolescents is important for developing appropriate screening strategies, treatment planning, and follow-up care.[12]

Objectives of the study

The objectives of the study were to:

1. Assess the prevalence of depression among the adolescents by using Beck Depression Inventory.
2. Identify the factors contributing to depression among adolescents.

MATERIALS AND METHODS

A survey approach with a school based cross-sectional design was adopted. The study was conducted in the English medium schools and pre-university colleges of Karnataka. A total of 10 secondary schools and 10 Pre-university colleges were randomly selected for data collection from a sampling frame of 44 English medium schools and pre-university colleges. The researcher obtained permission from 15 schools only, out of which one was one selected for pre-testing and reliability, two for pilot study and remaining twelve (seven EHS & five PUCs) for the main study. English medium schools and colleges were preferred for the study as the local language was unknown to the researcher. The population of the study was the adolescent students of standard IX to XII, studying in English medium schools of Udupi district, Karnataka.

Udupi block was selected by convenient sampling from five blocks in Udupi district, Karnataka. Sampling frame of English medium high schools and pre-university colleges was procured from the DDPI and DDPU, Udupi district, which comprised of 44 schools and Pre-university colleges. Ten higher secondary schools and ten PUCs were selected by Simple Random sampling for the main study. Proportionate stratified random was initially planned for the selection of adolescents from these schools. However, the researcher was able to get the permission from 15 schools only, including 7 high schools and 5 PUCs. Proportionate sampling of adolescents was possible in 2 schools only as in most of the schools, classes were allotted by the principal (in view of their academic routine) and thus random sampling was impossible. Thus, in some schools random selection of sections of classes were done and adolescents were selected conveniently maintaining the proportion keeping the gender in mind. Convenient sampling technique was used to select the main setting (Udupi block); schools, PUCs, & students. The data collection tools used comprised of demographic proforma, Beck Depression Inventory-I, Factors contributing to adolescent depression questionnaire and scale, Rosenberg's self-esteem scale. Data collected were analyzed using SPSS version 16 by computing the descriptive and inferential statistics.

RESULTS

Table 1's data reveals that 639 (32% of the total number of adolescent were in the tenth grade. 1305 teenagers, or 65.2% of them, identified as Hindus. The majority of the adolescents 1570 or 78.5% belonged to nuclear families. The majority of parents in 1942 (98.2%) were married and residing together. Majority 1274 (63.7%) of fathers were self-employed and 1683 (84.2%) of mothers were housewives.

Table 1: Frequency and Percentage distribution of adolescents based on sample characteristics

(n=2000)

Factors	Frequency (f)	Percentage (%)
Class of study		
9th standard	606	30.3
10th standard	639	32
11th standard	366	18.3
12th standard	386	19.4
Religion		
Christian	260	13
Hindu	1305	65.2
Muslim	433	21.7
Sikh	2	0.1
Type of family		
Nuclear	1570	78.5
Joint	430	21.5
Parental marital status		
Married	1942	97.1
Separated	9	0.5
Widow	5	0.2
Widower	44	2.2
Father's occupation		
Unemployed	18	0.9
Self-employed	1274	63.7
Employed	644	32.2
Daily wager	14	0.7
Others, please specify	50	2.5
Mother's occupation		
Housewife	1683	84.2
Self-employed	130	6.5
Employed	180	9
Daily wager	1	0
Others (unknown/ dead)	6	0.3

Section 2: Prevalence of depression among adolescents

The categories according to the inventory were normal, mild mood disturbances, borderline clinical depression, moderate depression, severe depression and extreme depression. Figure 1 represents the data on the prevalence of depression in the adolescents. Out of 2000 adolescents 30.2% adolescents were normal, while 25.8% were having mild mood disturbances and 14% belongs to the borderline clinical depression. Considering the scores above 17 as significant according to BDI, majority 22.4% was having moderate depression as shown in the fig. 1.

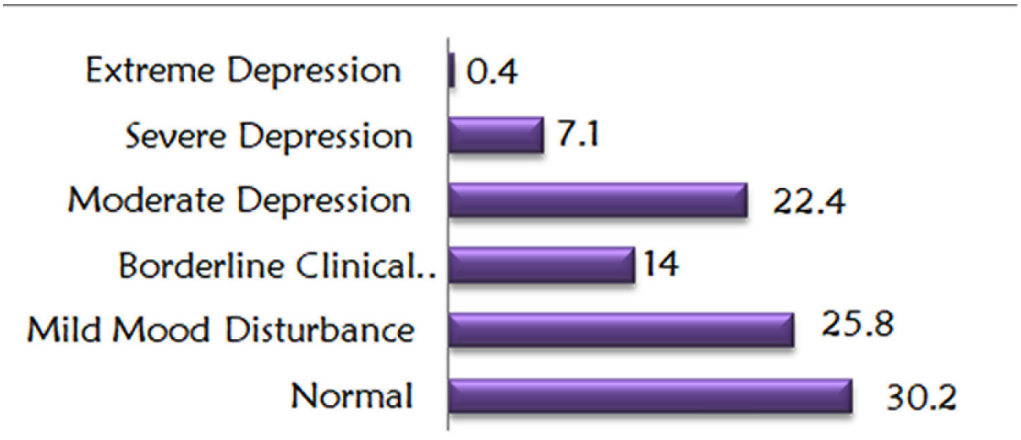

Fig 1: Percentage of depression in the adolescents

(n=2000)

For further analysis, different categories of depression were consolidated into two groups, normal (0-16) and depression (17 and above) as shown in fig. 1.

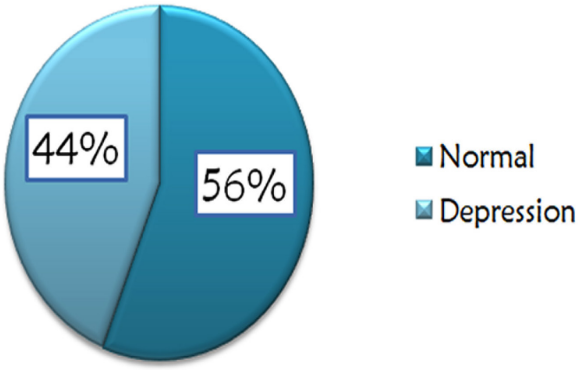

Fig 2: Pie diagram showing percentage of adolescents with depression

(n=2000)

Fig. 2 represents the consolidated data on the prevalence of depression in the adolescents. Out of 2000 adolescents, 603 (30.2%) adolescents were normal, while 517(25.8%) were having mild mood disturbances. These two categories of depression were included in the normal category constituting 56% of the sample; while those with borderline clinical depression (14%), moderate depression, severe depression (7.1%) and extreme depression (0.4%) were included in the category of adolescents having depression. Thus, 44% were found to be having depression.

Section 3: Description of factors contributing to adolescent depression 3.A. Biological Factors:

Table 2: Frequency and percentage distribution based on factors

Factors	Frequency (f)	Percentage (%)
Gender		
Male	1009	50.4
Female	991	49.6
Age		
14	476	23.8
15	598	29.9
16	453	22.6
17	391	19.6
18	82	4.1
Family history of depression/mood disorders		
No	1924	96.2
Yes	76	3.8
Presence of any illness in the student		
No	1910	95.5
Yes	90	4.5
Precipitating Factors: Stressful experiences in the past one year		
No	1724	86.2
Yes	276	13.8
Loss of someone close in past one year		
No	1578	78.9
Yes	422	21.1
Failure in final examination		
No	1892	94.6
Yes	108	5.4

The data presented in table 2 provides information on distribution of sample based on biological factors. Majority 1009 (50.4%) were males. Majority 598 (29.9%) were 15 years of age. About 76(3.8%) of the adolescents reported presence of significant family history and 90(4.5%) were suffering from significant illnesses. Assessment of the precipitating factors revealed 422(21.1%) adolescents had under gone stressful events. The adolescents who reported of having lost near and dear ones in the last one year were 1892(94.6%). A total 108 (5.4%) had failed in the final examinations atleast once in their lifetime.

Few open ended questions were used to identify some factors. It was found that the adolescents mostly suffered from illnesses as shown in below fig 3.

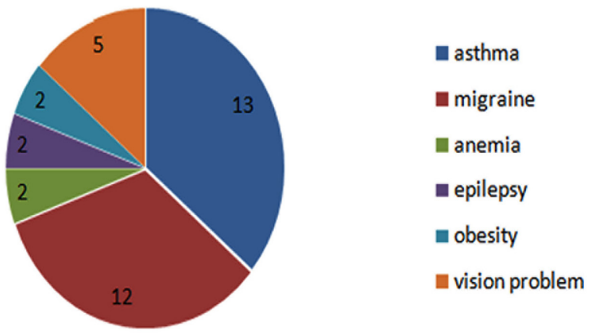

Fig 3: Frequency distribution based on illness suffered by adolescents

n=36

The major stressful events reported were: examination stress (100), love failure (24), hospitalization (13), school embarrassment incidents as caught stealing (4), being bullied by friends (7), being rusticated from school as he was epileptic (1), family and death of their family members and friends (6) in the last one year. Witnessing a suicide (1), menarche (1) and watching adult movies (1) were among the other reasons for adolescent stress.

3.B. Psychological/ personality Factors:

The data represented in table 3 shows that self esteem scores averaged at 20.97 with a standard deviation of 5.839.

Table 3: Mean, median, and standard deviation of self-esteem scores

n=2000

Sub-factor	Mean	Minimum	Maximum	Median	SD
Self-esteem	20.97	0	30	21	5.839

3.B.2: Anxiety: Anxiety was assessed by using a 4 point rating scale. The total scores were interpreted into three categories as mild anxiety (31-40), moderate anxiety (21-30) and severe anxiety (10-20). The data illustrated in figure 4 shows that majority 1116(55.8%) of adolescents were having mild anxiety, while only 167(8.4%) were having severe anxiety.

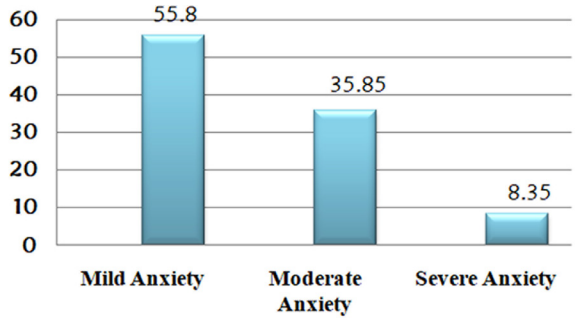

Fig 4: Percentage distribution of anxiety scores of adolescents

n=2000

3.B.3: Confidence: Confidence was assessed by administering a 4 point rating scale. The scores were interpreted at three levels as low confidence (11-21), moderate confidence (22-31) and high confidence (32-44). The data given in figure 5 shows that 113 (5.6%) of adolescents had low confidence.

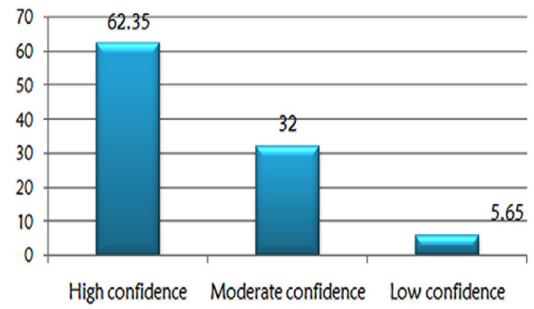

Fig 5: Percentage distribution of confidence scores of adolescents

n=2000

3.C: Interpersonal Factors

3.C.1: Family Relationship: The family relationship was assessed by administering a 4 point rating scale. The total scores were interpreted as good family relationship (41-80) and impaired family relationship (20-40). The data illustrated in fig 6 shows that only 23(1.2%) of adolescents had impaired family relationship.

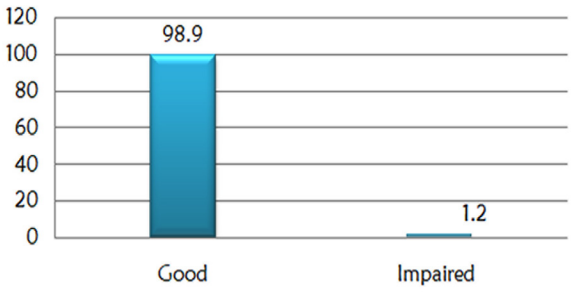

Fig 6: Percentage of distribution of family relationship score

n=2000

3.C.2: Peer Relationship: Peer relationship was assessed by using a 4 point rating scale. The categories for this sub-factor were good (22-44) and impaired peer relationship (11-21).

Fig 7 shows that 32 (1.6%) adolescents had impaired peer relationship.

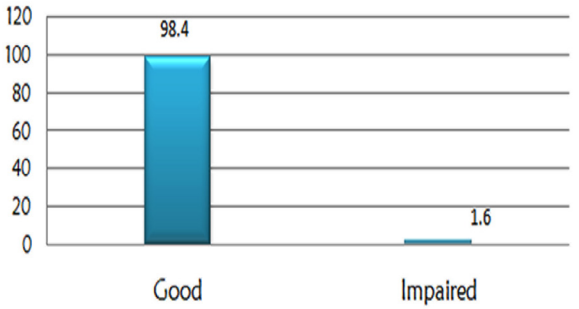

Fig 7: Percentage distribution of peer relationship scores

n=2000

3.C.3: Relationship with Teachers:

Fig 8 show that only 70 (3.5%) adolescents had impaired relationship with teachers.

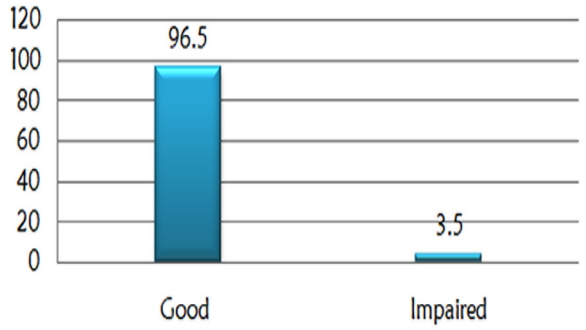

Fig 8: Percentage distribution of relationship with teachers

n=2000

The data shows significant association of depression with gender (x2= 4.69 p=0.03), family history of depression or any other mood disorders (x2=30.81 p<0.001); presence of significant illness (x2= 24.896=p<0.001); stressful experience in past one year x2=80.464 p<0.001); loss of someone close (x2=110.7 p<0.001), and failure in final examination (x2=41.906 p<0.001), among the biological factors. Age has no significant association with depression

The data shows significant association of depression with gender (x2= 4.69 p=0.03), family history of depression or any other mood disorders (x2=30.81 p<0.001); presence of significant illness (x2= 24.896=p<0.001); stressful experience in past one year x2=80.464 p<0.001); loss of someone close (x2=110.7 p<0.001), and failure in final examination (x2=41.906 p<0.001), among the biological factors.

Section 4: Relationship of depression with the identified factors.

4.A. Association of depression with biological factors:

Table 4: Chi-square showing association of biological factors with depression

(n=2000)

Biological factors	Normal f (%)	Depression f (%)	x2 (df)	p-value
Gender				
Male	541(53.6)	468(46.4)	4.691*(1)	0.030
Female	579(58.4)	412(41.6)		
Age				
14-15	607(56.5)	467(43.5)	0.252(1)	0.616
16-18	513(55.4)	413(44.6)		
Family history of depression/ mood disorders				
No	1101(57.2)	823(42.8)	30.812*(1)	0.001
Yes	19(25)	57(75)		
Presence of significant illness				
No	1093(57.2)	818(42.8)	24.896*(1)	0.001
Yes	27(30.3)	62(69.7)		
Stressful experiences in past one year				
No	1035(60)	690(40)	80.464*(5)	0.001
Yes	85(30.9)	190(69.1)		
Loss of anyone close in last one year				
No	979(62)	599(38)	110.7*(5)	0.001
Yes	141(33.4)	281(66.6)		
Failure in final examinations Depression				
No	1092(57.7)	800(42.3)	41.906*(1)	0.001
Yes	28(25.9)	80(74.1)		

4.B. Correlation between depression and psychological/personality factors:

Table 5: Correlation between depression and psychological/personality factors

n=2000

	Depression	Self-esteem	Confidence	Anxiety
Depression r; p-value	1	-0.794 <0.001	-0.760 <0.001	-0.729<0.001
Self esteem r; p-value	-0.794 <0.001	1	0.773 <0.000	0.727 <0.001
Confidence r; p-value	-0.760 <0.001	0.773 <0.001	1	0.764 <0.001
Anxiety r; p-value	-0.729<0.001	0.727 <0.001	0.764 <0.000	1

Age has no significant association with depression (x2=0.252 p=0.615).

The presence of significant illness in adolescents, experiences of stressful events in past one year, loss of someone close and failure in final examination are also found to precipitate depression in adolescents. However, depression is found to be independent of age, among the biological factors.

The normality of data was tested using kolmogorov smirnov test and it was found that the data was not following the normal distribution. Thus, these factors were correlated with depression using Spearman's rho test of significance. The data shows that there is significant negative correlation of all psychological/personality factors with depression as evident by the correlation coefficients of –0.794, -0.729, -0.760 for self esteem, anxiety score and confidence respectively at 0.001 level of significance. The table also suggests that self esteem and confidence share a strong positive correlation, implying that with increase in self esteem, confidence increases. The correlation with anxiety shows that with the increase in self esteem and confidence, the anxiety scores also increase which indicates lower level of anxiety. Thus, it implies that an adolescent with high self esteem and confidence has lower level of anxiety and vice versa.

The data shows that all the interpersonal factors as family relationship, peer relationship and relationship with teachers have significant negative correlation with depression with correlation coefficients of -0.700, -0.575 and -0.589 respectively. Thus, it is inferred that depression is inversely related with these interpersonal factors. Level of depression increases with impaired family, peer and teacher relationships.

4.C: Correlation between depression and interpersonal factors:

Table 6: Correlation between depression and interpersonal factors

(n=2000)

Interpersonal factors	Y	p-value
Family relationship Depression	-0.700*	0.001
Peer relationship Depression	-0.575*	0.001
Relationship with teachers Depression	-0.589*	0.001

Section 5: Association of depression with the selected demographic variables

Table 7: Chi-square value showing association between depression and selected demographic variables

n=2000

Variables	Normal f (%)	Depression f (%)	x2	df	p-value
Class of study					
9	335(55.3)	271(44.7)			
10	369(57.7)	270(42.3)			
			2.782	3	0.426
11	193(52.7)	173(47.3)			
12	223(57.3)	166(42.7)			

Table cont.....

Religion					
Christian	159(61.2)	101(38.8)	5.409	3	0.144
Hindu	73456.2)	571(43.8)			
Muslim	226(52.2)	207(47.8)			
Sikh	1(50)	1(50)			
Type of family					
Nuclear	891(56.8)	679(43.2)	1.669**	1	0.001
Joint	229(53.3)	201(46.7)			
Parental marital status					
Married	1094(56.3)	848(43.7)	4.020	4	0.403
Divorced	3(33.3)	6(66.7)			
Separated	3(60)	2(40)			
Widow	18(45)	22(55)			
Widower	2(50)	2(50)			
Father's occupation					
Unemployed	6(33.3)	12(66.7)	9.723	5	0.083
Self employed	707(55.3)	571(44.7)			
Employed	379(58.9)	264(41.1)			
Daily wager	8(57.1)	6(42.9)			
Retired	2(40)	3(60)			
Others (dead)	18(42.9)	24(57.1)			
Mother's occupation					
Housewife	929(55.3)	752(44.7)	5.348	4	0.253
Self employed	84(64.1)	47(35.9)			
Employed	105(57.4)	78(42.6)			
Daily wager	0	1(100)			
Others (dead)	2(50)	2(50)			
Father's education					
Primary	104(40.6)	152(59.4)	57.218*	8	0.001
Matriculate	287(52.2)	263(47.8)			
PUC	372(65)	200(35)			
Graduate	234(59.5)	159(40.5)			
Post-graduate	40(65.6)	21(34.4)			
Professional	40(54.8)	33(45.2)			
Uneducated	0	1(100)			
Others (not known)	26(50)	26(50			
Not applicable (Dead)	17(40.5)	25(59.5)			
Mother's education					
Primary	198(47.4)	220(52.6)	23.628*	8	0.003
Matriculate	431(58.6)	305(41.4)			
PUC	265(60)	177(40)			
Graduate	162(59.1)	112(40.9)			
Post-graduate	16(53.3)	14(46.7)			
Professional	14(42.4)	19(57.6)			
Uneducated	4(33.3)	8(66.7)			
Others (not known)	28(54.9)	23(45.1)			
Not applicable (dead)	2(50)	2(50)			

Table cont.....

Family Annual income In rupees					
< 100000	467(54.1)	396(45.9)	5.657	3	0.130
100001 – 300000	490(58.5)	347(41.5)			
300001 - 500000	102(51.5)	96(48.5)			
>500001	61(59.8)	41(40.2)			

** Fisher's exact value

The data shows that there is no statistically significant association between depression and the selected demographic variables such as class of study, age, religion, type of family, parental marital status, parental occupation, and annual income. However, there is a statistically significant association between depression and father's education (x2=57.21 p=0.001), and mother's education (x2=23.62 p=0.003).

DISCUSSION

Prevalence of depression among adolescents

The prevalence of depression among adolescents overall in the current study is 44%. The majority of adolescents, 449 (22.4%), were depressed, followed by 280 (14%) who had borderline clinical depression. 142 people (7.1%) were judged to have severe depression, and 9 (0.4%) of them were experiencing extreme depression. The findings are consistent with those of other Indian studies, which found that the prevalence of adolescent depression ranged from 18.4% to 79.2%.[8-11] Mild mood disturbances were found to be the most prevalent type of depression (25.8%). Adolescence is a time of significant transition from childhood to adulthood, and as such, it is possible that adolescents are stressed out by the physiological and biological changes they must manage while also seeking to fit in with their families, friends, and peers and school environment.

However, the cut-off score for depression according to BDI is 17. Taking this into consideration, moderate depression (22.4%) is found to be the common level of depression in the present study that is in line with the other studies.[9,12-14]

Factors contributing to Adolescent depression

A. Gender and depression

Depression and gender were significantly correlated (r=4.69, p=0.03). According to the information acquired through open-ended questionnaires, the main causes of male depression were exam stress, failed romantic relationships, hospitalization, and humiliating experiences like peer bullying. Recently, it has been noted that men can tolerate certain pressures less. Compared to females, they are more involved in the environment and therefore more vulnerable to stressors. The finding is supported by a study conducted by Sun etal in China.[15]

This finding, is however incongruent with the results of other studies where female gender scored higher on depression than the males.[8,15-19]

B. Family History of depression/ any mood disorders and depression:

The present study found a significant association of depression with family history (r=30.81, p<0.001). The finding is congruent with the findings of a many other studies conducted previously, which revealed a significant association of adolescent depression with family history of the same.[20,21]

C. Stressful life experiences and depression:

Stressful life experiences had significant association with depression (r=80.183,p<0.001). Stressful experiences as identified in the study were death of a near one, shaming experiences, examination preparation stress and hospitalization. These experiences are known to affect the person's coping skills. The reaction to these stressors depends on the person's personality, coping skills and support from significant individuals. The sustained presence of these stressors may eventually give rise to development of depression.

The study findings are congruent with the findings of other studies that concluded the presence of stressful life experiences as one of the precipitating factor of adolescent depression.[10,23,24,25]

D. Academic failure and depression:

Strong association was identified between academic failure and depression (x2=41.906, p<0.001). This finding is comparable with the findings of a studies conducted by Lipps et al.[26] and Basavarajjapa and Khanehkeshi[27], stating that academic failure is significantly related with depression

E. Self-esteem and depression:

Self-esteem was found to have significant negative correlation with depression (r=–0.791, p<0.001). This correlation is supported by another study conducted by Avison and McAlpine in

Ontario. Linear regression showed that self-esteem along with other factors, accounted for 39% of the variance in the CES-D score for adolescent depression.[28]

Another study conducted on personality, self -esteem predictors of happiness and depression among high school student in Iran by Malekiha et al in 2012, also supports the findings. They studied the correlations between personality, self-esteem and happiness, depression among 110 buys in a high school. The participants completed Myers-Briggs Type Indicators, Rosenberg Sef Esteem Scale, Beck Depression Inventory, and Oxford Happiness Inventory. The results of the study revealed that self-esteem was significantly correlated with happiness and depression (r= 0.46, r= -0.57; p<0.01).[29]

F. Anxiety and depression:

Anxiety was seen to be significantly related to depression (r=-0.729,p<0.001). The findings suggest that an adolescent who is very prone to or is in a constant state of anxiety is also prone to develop depression.

Matos et al carried out a cross-sectional study with Portuguese children and adolescents, aged 10 to 17 attending 6th, 8th and 10th grade in public schools, to examine the relationship between feelings of anxiety and depression; to examine the association of positive peer relationships, and anxiety and depression in school-age adolescents; to examine the relationship between health, peer relationships, depression and anxiety; and finally, and to assess age and gender differences with regard to the above issues. Consistent with previous studies, anxiety and depression were found to be significantly correlated. A *Manova* revealed that females and adolescents in grades 8 and 10 were more likely to report high anxiety and/or depressive symptoms. High anxiety and depression in adolescence was associated with poor peer relationships and poorer health. These researchers confirmed a significant association between depression and anxiety.[30]

Yet another study supports the present findings. The study was conducted by Sahoo and Khess to assess the prevalence of depression, anxiety, and stress among young male adults in India. Ranging from mild to extremely severe, depressive symptoms was present in 18.5% of the population, anxiety in 24.4%, and stress in 20%. Clinical depression was present in 12.1% and generalized anxiety disorder in 19.0%. Comorbid anxiety and depression were high, with about 87% of those having depression also suffering from anxiety disorder.[31]

G. Confidence and depression:

Confidence was found to have significant negative correlation with depression (r=-0.760, p<0.001). The findings say that an adolescent who is has low confidence may be at risk for development of depression in favorable situations. Confidence is a part of individual personality. The results are supported by a study by Cheng and Furnham, who looked at how peer relationships, self-confidence, and academic success connected to adolescents' self-rated happiness and loneliness. Significantly opposing correlations between happiness and loneliness were found for personality traits, self-confidence, friendship, and academic performance. According to regression analysis, neuroticism and extraversion directly predicted happiness and self-confidence, while psychoticism and extraversion directly predicted loneliness. While psychoticism was a direct predictor of loneliness, extraversion was also a substantial predictor of overall self-assurance and social interactions, both of which had a direct impact on loneliness. While general confidence and social connections were linked to adolescents' self-reported loneliness, self-rated academic success was the only factor that directly predicted happiness.[32]

H. Family relationship and depression:

The findings of the study suggest that depression has significant negative correlation with family relationships (r=-0.700, p<0.001). This finding is supported by the similar findings of few studies where family relationship was shown to have a significant negative correlation with adolescent depression.[10,17,33,34,35]

I. Peer relationship and depression:

The correlation coefficient for peer relationship and depression was found to be -0.575 with p value of less than 0.001, suggestive a significant negative correlation between the two. This study finding is congruent with the results of other studies, that concluded a significant negative correlation between adolescent depression and peer relationship.[17,36,33,37,34]

Relationship with teachers and depression:

Depression was also found to be significantly inversely correlated with relationship with teachers (r=-0.589, P<0.001).

A study by Reddy et al. in Boston, USA, to evaluate the impact of teacher assistance on student adjustment during the middle school years lends credence to the study's conclusions. From the sixth to the eighth grades, 2,585 students were monitored in a longitudinal sample. Over the duration of middle school, students' views of teacher support

and overall self-esteem decreased, while depression symptoms rose. They also discovered that changes in teachers' perceived support accurately predicted changes in both self-esteem and depression for both boys and girls. Students who perceived more teacher support in particular displayed similar declines in depressed symptoms and gains in self-esteem. This study under scores the role of teacher support in facilitating students' adjustment to middle school and highlights the importance of using idiographic methodologies in the study of developmental processes.[38]

CONCLUSION

The study concludes that depression is a relatively common phenomena in adolescents, given that 44% of adolescents in this study were found to be depressed. This indicates that adolescents are facing considerable turmoil in this phase of their life. This calls for the need for proper attention to be given to adolescents and to institute relevant screening measures to identify adolescents with early signs of depression. The common factors identified are biological factors as gender (more in males), demographic factors as parent's educational status. Amongst the psychological factors self esteem, confidence and anxiety are significantly correlated with the occurrence of depression. Interpersonal factors as family relationship, peer relationship and relationship with teachers were also found to have significant correlation. Thus it becomes imperative for early screening, identification of these factors so as to prevent the development of depression in the adolescents. The findings highlight the need for the education of the parents, teachers and adolescents themselves regarding depression and measures to prevent it. Various school based interventions could be developed as well to identify and provide needed interventions to minimize the development of serious problems as drug abuse and suicide in the future.

Recommendations

To stop adolescent depression from developing, a school based intervention may be devised, created, and implemented. The study could be repeated to include public schools, as this group of teenagers might have a distinct pattern of prevalence. The parents and teachers could be involved in further factor exploration. To determine the prevalence of depression in urban, rural, private, and public schools, respectively, comparative studies may be carried out. By organising teen health education on depression prevention and detection, the community health department may expand its services to the school.

Limitation

- Beck's Depression Inventory (BDI) is a screening tool only, not diagnostic of depression. As it is a cross-sectional study, it is difficult to firmly establish the causal link between adolescent depression and the factors.
- Proportionate stratified sampling method for the selection of adolescents was not possible in majority of the schools as priority was given to the academic routine and thus random sampling was impossible.
- Since the data collection period was less and school examinations were round the corner, information from parents and teachers was impossible. The data collected from this group would have been more valid and rich.
- The setting was limited to English medium schools only as the language was unknown to the investigator. Thus, the generalization of findings to adolescents from government schools remain restricted.

ACKNOWLEDGEMENT

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REFERENCES

1. Centers for Disease Control and Prevention National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS).
2. Vanya H, Magorno M. Assessment of adolescents for depression in the pediatric primary care setting. Pediatric Nursing. 2010 March-April; 36(2): 103-11.
3. Sharp LK, Lipsky MS. Screening for depression across the lifespan:a review of measures for use in primary care sttings. American Family Physician. 2002 Sept 15; 66 (6): 1001-4.
4. Shashi K, Bhatia MD, Bhatia SC. Childhood and adolescent depression. American Family Physician. 2007 Jan 1; 75 (1): 73-9.
5. National Institute of Mental Health.2010. Blueprint for change; research on child and adolescent mental health. Betrhseda, Md: National Advisory Mental

Health Council's Workup on Child and Adolescent Mental Health Intervention, Prevention, and Development, 2001. retrieved from http://www.nih.gov/publiccat/nimhblueprint.pdf.

6. Sund M A, Larsson B, Wichstrom L. Prevalence and characteristics of depressive symptoms in early adolescence in Central Norway. Child and Adolescent Psychiatry and Mental Health. 2011; 5 (28).
7. Grover S, Dutt A, Avasthi A. An overview of Indian research in depression. Indian J Psychiatry [serial online] 2010 [cited 2012 Aug 20];52:178-88.available from: http://www.indianjpsychiatry.org/text.asp?2010/52/7/178/69231.
8. Reddy MV, Chandrashekhar CR. Prevalence of mental and behavioural disorders in India: A metaanalysis. Indian Journal of Psychiatry 1998;40:149-57.
9. Mohanraj R, Subbaiah K. Prevalence of depressive symptoms among urban adolescents in south India. Journal of Indian Association of Child Adolescents Mental Health. 2010; 6 (2).33-45.
10. Bansal V, Goyal S, Srivastava K. Study of prevalence of depression in adolescent students of a public school. Industrial Psychitry Journal; 2009 Jan-Jun; 18(1).
11. Nair MKC, John R. Prevalence of depression among adolescents. Indian Journal of Pediatrics.2010.71; 523-24.
12. WHO Mental Health Department, Definition of depression [internet].2010. Available from .www.int/mental health/management/ depression/ definition/en.
13. Steinhausen HC, Winkler M. Prevalence of affective disorders in children and adolescents; findings from the Zurich Epidemiological Studies. Acta Psychiatric Scand 2003, 108:(suppl 418);20-23.
14. 14. Saluja G, Lachan R, Scheidt PC, Overpeck MD, Sun W, Giedd JN. Prevalence and risk factors of depressive symptoms among young adolescents. Archives of Pediatrics and Adolescent Medicine. 2004 Aug; 158(8); 760-65.
15. Sun Y, Tao F, Wan Y. The mediating effects of stress and coping on depression among adolescents in China. Journal of Occupational and Adolescent Psychiatric Nursing, 2010;23(3): 173-80.
16. Asal ARA, Abdel-Fattah MM. Prevalence, symptomatology, and risk factors for depression among high school students in Saudi Arabia. Neuroscience. 2007, 12(1); 8-16.
17. Sajjadi H, Kamal SHM, Rafiey H, Vameghi M, Forouzan AS, Rezaei M. A systematic review of the prevalence and risk factors of depression among Iranian adolescents. Global Journal of Health Science. 2013; 5(3): 16-27.
18. Bhasin SK, Sharma R, Saini NK. Depression, anxiety and stress among adolescent students belonging to affluent families: a school-based study. Indian Journal of pediatrics, 2010;77: 161-64.
19. Baron, P., &Perron, L. M. Sex differences in the Beck Depression Inventory scores of adolescents. Journal of Youth and Adolescence. 1986; 15: 165-71.
20. Li CE, DiGiuseppa R, Froh J. The roles of sex, gender, and coping in adolescent depression. Adolescence. 2006; 41(163), 409-13.
21. Adewuya AO, Ologun YA. Factors associated with depressive symptoms in Nigerian adolescents. Journal of Adolescent Health. 2006 Jul; 39(1):105-10.
22. Cook MN, Peterson J, Sheldon C. Adolescent depression: an update and clinical guide to clinical decision making. Psychiatry (Edgemont) 2009; 6(9):17-31.
23. Hirshfeld-Becker DRetal. American Journal of Psychiatry. Psychopathology in adolescent offspring of parents with panic disorder, major depression, or both: a 10-year follow-up .2012 Nov 1; 169(11):1175-84.
24. Aslund C, Nilson KU, Starrin B, S joberg RL. Shameful experiences and association of adolescent depression and psychosocial risk factors. European Journal of Child and Adolescent Psychiatry, 2007 August; 16(5): 298-304.
25. Adams J, Adams M. Effects of a negative life events and perceived problem solving alternatives on depression in adolescents: A prospective study. Journal of Child Psychology and Psychiatry. 1991 July; 32(5): 811-20.
26. Lipps GE, Lowe GA, Halliday S, Morris-Patterson A, Clarke N, Wilson RN. The association of academic tracking to depressive symptoms among adolescents in three Caribbean countries. Child and Adolescent Psychiatry and Mental Health. 2010 May 28; 4(16).
27. Basavarajjapa, Khaneshkeshi A. The relationships of academic stress, depression and self-efficacy with academic performance among high school students in Iran. Indian Stream Research Journal. 2012 June; 1(v); 1-4.
28. Avison WR, McAlpine DD. Gender differences in symptoms of depression among adolescents. Journal of Health and Social Behavior. 1992 June; 33(2): 77-96.
29. Malekiha M , Abedi MR, Baghban I. Personality, self-esteem predictors of happiness and depression among high school students in Iran. Inter disciplinary Journal of Contemporary Research in Business. 2012 Feb; 3(10): 569-80.
30. Matos D, Gasper M, Paula B, Mark D, Allison S. Anxiety, Depression, and Peer Relationships during Adolescence: Results from the Portuguese National Health Behaviour in School-Aged Children Survey. European Journal of Psychology of Education. 2003 March; 18(1): 3-14.

31. Sahoo SKhess CR. Prevalence of depression, anxiety, and stress among young male adults in India: a dimensional and categorical diagnoses-based study. Journal of Nervous and Mental Disease. 2010 Dec; 198(12):901-4.
32. Cheng H, Furnham A. Personality, peer relations, and self confidence as predictors of happiness and loneliness. Journal of Adolescence. 2002; 25: 327-39.
33. Voorhees BWV, Paunesku D, Kuwabara SA, Basu A, Gollan J etal. Protective and vulnerability factors predicting new-onset depressivde episode in a representative of U.S. adolescents. Journal of Adolescent Health. 2008; 42: 605-16.
34. Field T, Diego M, Sanders C. Adolescent depression and risk factors. Adoloscence, 2001; 36(14): 492-98.
35. Consoli A, Peyre H, Speranza M, Hassler C, Falissard B, Touchette E, etal. Suicidal behaviors in depressed adolescents: role of perceived relationships in the family relationships. Child and Adolescent Psychiatry and Mental Health. 2013; 7(8): 1-24.
36. Khasakhala LI, Ndetei DM, Mutiso V, Mbwayo AW, Mathai M. The prevalence of depressive symptoms among adolescents in Nairobi public secondary schools: association with perceived maladaptive parental behaviour. African Journal of Psychiatry (Johannesbg). 2012 Mar; 15(2):106-13.
37. Uba I, Yaacob SN, Juhari R. The relationship between peer relationship and depression among adolescents in Selangor, Malaysia. European Journal of Social Services. 2009; 11(1): 149-59.
38. Reddy R, Rhodes J.E, Mulhall P. The influence of teacher support on student adjustment in the middle school years: A latent growth curve study. Development and Psychopathology. 2003; 15: 119-38.

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Role of Closed Incision Negative Pressure Wound Therapy in Preventing Abnormal Scarring

Hari Narendhiran NE[1], Ravi Kumar Chitoria[2], Jocob Antony Chakiath[3]

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ABSTRACT

Negative pressure wound therapy has revolutionised the way in which acute and chronic wounds are treated. The incision site is usually covered with an occlusive or semi occlusive covering after primary wound closure. It is thought that using closed incisional negative pressure wound therapy on surgical wounds improves wound healing by better distribution of shear stresses on wound edges and promoting the evacuation of wound fluids such as subcutaneous seroma and hematoma.

Keywords: Abnormal Scarring; Closed Incisional; Negative Pressure; Wound; Burn.

INTRODUCTION

Negative pressure wound therapy has revolutionised the way in which acute and chronic wounds are treated.[1-2] The benefits of closed incisional negative pressure wound therapy (ciNPWT) on surgical wounds after vascular surgery, hip replacement, or amputations have been proven in several investigations.[3-5] It is thought that using ciNPWT on surgical wounds improves wound healing by better distributing shear stresses on wound edges and promoting the evacuation of wound fluids such as subcutaneous seroma and hematoma.[6-8] Furthermore, ciNPWT minimises wound dehiscence and possibility of germ entry through its protective sealing.[6] in this study, we are sharing our experience of using ciNPWT in promoting wound healing and preventing abnormal scarring.

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MATERIALS AND METHODS

This study was conducted in the department of Plastic Surgery at tertiary care centre in South India after getting the departmental ethical committee approval. Informed written consent was taken from the patient. A 20 year old Male with post-burn contracture of left little finger with subluxation of left 5th metacarpophalangeal joint. The contracture was due to burns which occurred when he was 1.5 years old due to contact with burning firewood. It caused significant deformity and functional limitation of the left little finger. Contracture release was done. Full thickness skin graft was from left groinand applied over the finger. Following this, Closed Incision Negative Pressure Wound Therapy was done to the donor site.

RESULTS

The donor site healed completely with minimal scar formation.

Fig. 1: Donor site skin closure

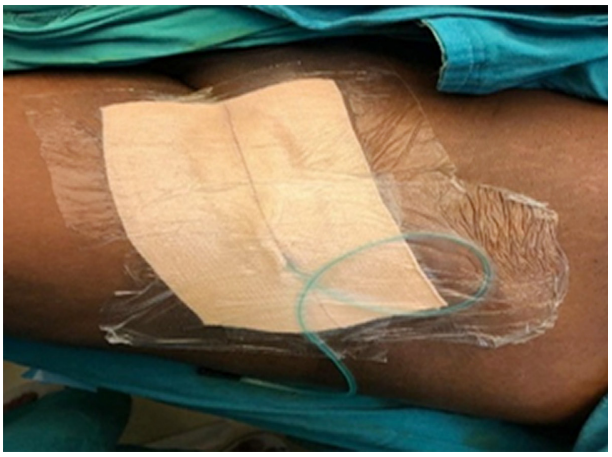

Fig. 2: Application of CiNPWT at donor wound site

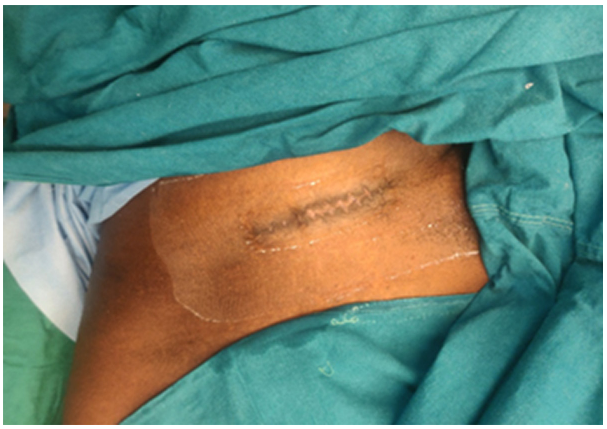

Fig. 3- Donor site healed well

DISCUSSION

Negative pressure wound vacuum therapy (NPWVT) is a well known treatment for infected or burst open surgical incisions. Its usage in closed surgical sites has recently become the topic of new investigation.

Macroscopic findings include shortening of the time of wound closure and maintaining a moist wound environment; reduces oedema and seroma formation. It also helps in mending tissues.

Microscopic effects include increased VEGF, IL.[8] VEGF gradient increases toward the wound and triggers angiogenesis. Oriented toward the wound compared to fewer tortuous new vessels observed in controls; stimulates cell proliferation trough micro-deformation; decreases local blood flow in those tissues in closest proximity to the ROCF; changes the colonizing flora of the wound, may increase or have no effect on overall bacterial load; increased neovascularization.[6]

There are many modes of application of negative pressure: continuous, intermittent, and cyclic. Continuous mode uses a constant sub-atmospheric pressure of 125 mmHg; intermittent mode uses 5 minutes of -125 mmHg followed by 2 minutes of 0 mmHg. In cyclic mode, pressure oscillates between 0 and -125 mmHg.[7] Cyclic mode is found to be less painful and more effective as a rapid rise in pressure is prevented.[8,9] But both intermittent and cyclic modes require specific machines for generation and hence are not feasible to use with classical suction devices. So in most cases, continuous mode NPWT is commonly used.

Siegwart et al, looked at the role of ciNPT in preventing abdominal donor site problems in 300 microsurgical breast reconstructions in a preliminary research.[10] The authors discovered a considerable reduction in wound dehiscence after considering our findings/ ciNPT has been reported to be effective as a prophylactic treatment for the donor site of other flaps, where wound fluid collection is the primary cause of wound complications, allowing suction drains to be removed sooner.[11,12] Experimental studies have shown that ciNPT reduces tension across the surgical incision, improving local blood flow and hence minimizing dead space and wound fluid collection.

With regard to our study, we demonstrated that ciNPT is a cornerstone to improve scar quality and the esthetic scar appearance. As this a single case study, further large scale randomized control study is required to comment on its efficacy.

CONCLUSION

Closed Incision Negative Pressure Wound Therapy is found to be effective in preventing abnormal scarring by accelerating cell proliferation and wound healing processes.

REFERENCES

1. Agarwal A. Plast Reconstr Surg. 2019 Jan;143(1S Management of Surgical Incisions Utilizing Closed-Incision Negative-Pressure Therapy):21S-26S.
2. Jeyakumar, P., Hussain, A. T., &Ahamed, A. R. (2018). Reconstruction of Extensive Post-ElectricBurnLowerlimb defect Defects With Exposed Bones — A Study of 12 Cases. Annals of Plastic Surgery.
3. Matatov T, Reddy KN, Doucet LD, Zhao CX. Experience with a new negative pressure incision management system in prevention of groin wound infection in vascular surgery patients. J VascSurg 2011;57(3):791-5.
4. Masden D, Goldstein j, Endara M, Xu K, Steinberg J, Attinger C. Negative pressure wound therapy for at-risk surgical closures in patients with multiple comorbidities. Ann Surg 2012;255(6):1043-7.
5. Stannard JP, Volgas DA, McGwin G, Stewart RL, Obremskey W, Moore T, et al. Incisional negative pressure wound therapy after high-risk lower extremity fractures. J Orthop Trauma 2012;26(1):37-42.
6. Horch RE. Incisional negative pressure wound therapy for high-risk wounds. J Wound Care 2015;24:21-8.
7. Willy C, Agarwal A, Andersen CA, De Santis G, Gabriel A, Guerra OM, et al. Closed incision negative pressure therapy: international multidisciplinary consensus recommendations. Int Wound J 2016;14 (2) :385-98.
8. Suh H, Lee AY, Park q, Hong JP. Negative pressure wound therapy on closed surgical wounds with dead space animal study using a swine model. Ann PlastSurg 2016;76(6):717-22.
9. Hyldig N, et al. (2016). Meta-analysis of negative-pressure wound therapy for closed surgical incisions. British Journal of Surgery. 2016: 103; 477-486.
10. Siegwart LC, Sieber L, Fischer 5, Maraka 5, Kneser U, Kotsougiani-Fischer D. Influence of closed incision negative-pressure therapy on abdominal donor-site morbidity in microsurgical breast reconstruction. Microsurgery 2020:1-8.
11. Tyack Z, Simons M, Spinks A, Wasiak J. A systematic review of the quality of burn scar rating scales for clinical and research use. Burns 2012;38(1):6-18.
12. Gomoll AH, Lin A, Harris MB. Incisional vacuum-assisted closure therapy. J Orthop Trauma. 2006 Nov-Dec;20(10):705-9. doi: 10.1097/01.bot.0000211159.98239.d2. PMID: 17106382.

Review Article

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Advancements in Management of Diabeties Mellitus

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ABSTRACT

Introduction: Diabetes is a group of metabolic disease in which there are high blood sugars for a prolonged period, if untreated leads to many life-threatening complications. Diabetes is due to either the pancreas not producing enough insulin or the cells of the body not responding properly to insulin.

Definition: Diabetes is a chronic metabolic disease characterized by elevated levels of blood glucose which leads over time to serious damage to heart, blood vessels, eyes, kidney and nerves.

Incidence:

- IDF Global Diabetes Atlas provides estimated and projected prevalence rate of diabetes around the world. Its most recent data from 2021 shows that China has the largest number of adults with diabetes aged 20-79 years followed by India and Pakistan.
- 463 million people globally are diagnosed with diabetes. In that 88 million are from south east Asia, out of that 88 million, 77 million are from India.
- The most affected rate in India is the economically and epidemiologically advanced states that is Kerala and Tamil Nadu. Kerala is the diabetic capital of India.
- In Telangana 26% above 30 years are diagnosed and are at high risk. Total 8% of the people of whole Telangana are diabetics.
- The incidence of diabetes has been increasing significantly on a global level. According to the latest statistics issued by the International Diabetes Federation, the number of adult diabetes cases reached 463 million worldwide in 2019, and it is anticipated to rise to 700 million cases by 2045. With the growing prevalence of diabetes, the economic cost has become burden some. The total cost of US-diagnosed diabetes in 2017 was estimated by the American Diabetes Association to be $327 billion, with an average individual expense of $16,752 er year. These figures demonstrate the significance of diabetes and encourage scientists and researchers to develop innovative solutions to make the lives of diabetics easier.

Keywords: Diabetes; Metabolic disease; High blood sugars; Life-threatening; Pancreas; Insulin.

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INTRODUCTION

Glucose monitoring is an important part of diabetes management, from self-monitoring of fasting and postprandial 2-h blood glucose to continuous glucose monitoring (CGM). Other metrics for monitoring diabetes include glycated haemoglobin A1c (HbA,) and glycated albumin (GA). Among these, self-monitoring of blood glucose (SMBG) is the basic form of glucose monitoring, where as HbA1c is a gold standard for assessing glycaemic control. However, HbA1c and SMBG have their own limitations. The HbA1c reflects the mean blood glucose (MBG) level over the past 2-3 months. Thus, there is a "delayed effect" for assessing the efficacy of a treatment. More over, HbA1c cannot accurately predict the risk of hypoglycaemia, nor does it fully reflect the characteristics of blood glucose fluctuations.

Continuous Glucose Monitoring (CGM)

CGM continuously monitors the glucose in concentrations in subcutaneous interstitial fluid through a glucose sensor. It can detect occult hyperglycaemia, hypoglycaemia, and the trends in glycaemic changes that cannot be routinely detected the by self-monitoring of blood glucose (SMBG), there by more comprehensively reflecting the characteristics of glycaemic fluctuations.

Continuous glucose monitoring (CGM) sensors are portable devices that allow measuring and visualizing the glucose concentration almost continuously (usually every 1–5 min) for several days (so far up to seven days).

Components of Continuous Glucose Monitor

CGM sensors are composed of three main elements:

i. *A needle based sensor:* Which is usually inserted in the abdominal subcutis and measures an electrical signal proportional to the glucose concentration present in the interstitial fluid.

ii. *Transmitter*: Which is applied over the sensor and is aimed at transmitting the signal.

iii. *Monitor:* A portable device, which receives the signal and visualizes it on a monitor.

Special Features of a CGM

CGM uses subcutaneous sensors to measure glucose levels in interstitial fluid.

CGM can be done two ways: intermittently scanned (CGM), where patients scan the sensor transmitter on demand using a receiver or their smartphone, or in real time (rtCGM), where the transmitter automatically sends glucose values to the patient's receiver or smartphone every one to five minutes, along with alerts when blood glucose levels fall outside accepted parameters.

CGMs are always on and recording glucose level even during showering, working, exercising, or sleeping. Many CGMs have special features that work with information from glucose readings:

- An alarm can sound when glucose level goes too low or too high.
- Can note meals, physical activity, and medicines in a CGM device, too, alongside your glucose levels.
- It is easy to download data to a computer or smart device to more easily see glucose trends.

Some models can send information right away to a second person's smartphone perhaps a parent, partner, or caregiver. For example, if a child's glucose drops dangerously low over night, the CGM could be set to wake a parent in the next room.

Currently, one CGM model is approved for treatment decisions, the Dexcom G5 Mobile. That means person can make changes to diabetes care plan based on CGM results alone.

Indications of CGM

- Person who is on intensive insulin therapy.
- Hhypoglycaemia unawareness.
- Frequently having high or low blood glucose.

Advantages of Continuous Glucose Monitoring

- Glucose levels can be tracked throughout the day and night.
- Glucose levels can be checked during the night when the levels are generally not tested.
- A rise or drop in glucose levels can be tracked, which will help people with diabetes to take early action.
- CGM helps to reduce the number of finger prick tests.
- CGM can help improve the levels of HbA1c as it helps to tailor the insulin dose more carefully.
- It helps patients to reduce hypoglycaemia (low glucose) events, as they can notice a downward trend even before the sugar levels sharply drop.
- The device can be used to set triggers and alarms for very high and low glucose spikes.

- CGM helps evaluate and measure the effects of diet and exercise on sugar levels.
- It aids in determining the effectiveness of the treatment plan at a detailed level.

Things to Remember While Using a Continuous Glucose Monitor:

- The sensor needs to be replaced every 3 to 7 days, depending on the model used. When ever the sensor is changed, the transmitter has to be attached to the new sensor.
- Some devices need to be calibrated by checking the blood glucose on a glucose meter twice a day.

Limits of CGM:

- Although a CGM may provide a bigger picture of blood sugar trends over a 24-hour period, it is not a solution for everyone. Sometimes, depending on individual health insurance, CGMs may not be covered and generally have higher out of pocket cost than standard blood glucose monitoring devices.
- Another limitation is that the glucose values from CGMs are interstitial fluid glucose measurements and may not be reliable because of the body fluid shifts,".
- With CGM, the ISF glucose levels may not always match the actual blood sugar levels. This is why it's important to use CGM as a supplement to, and not a replacement for, finger-stick blood sugar testing. "There can be lags in glucose values between interstitial results of (CGM) and capillary results (finger sticks.
- Other drawbacks of CGM include:
- CGM doesn't eliminate the need for traditional finger stick blood glucose tests. Blood sugar may need to be checked twice per day using finger stick methods to ensure accuracy.
- Depending on the model, most CGM sensors need to be replaced every 3 to 7 days, which can be expensive.
- The use of acetaminophen, found in Tylenol, may cause false high readings.
- False low readings may occur when sleeping on the sensor.
- CGM devices require a technical understanding and the ability to interpret CGM readings and a data which may difficult for nantech savvy users.
- Routine maintenance may be needed depending on the model.

Insulin Pumps:

- Insulin pumps are small, computerized devices. They are about the size of a small cell phone. Insulin pumps deliver doses of insulin on a pre-programmed schedule. Insulin is the hormone that regulates your blood sugar.

Sites:

- Attached to a strap under your clothes.
- In your pocket.
- On your belt.
- With an adhesive patch on your stomach or arm.

Action:

- People who have diabetes don't make enough insulin naturally. Instead, they have to use insulin injections to manage their blood sugar.
- Pumps offer a steady stream of insulin so that you can have fewer needle sticks. They're also a good option for children or anyone who has trouble remembering their insulin injections. Because insulin pumps stay attached to the body, some people find an insulin pump more convenient than insulin pen injections.

Indications:

Using an insulin pump is a personal preference. You may want to use an insulin pump if you:

- Experience delays in food absorption.
- Are active and may want to pause insulin doses when exercising.
- Have severe reactions to low blood sugar.
- Have diabetes and are planning a pregnancy.

Insulin pumps can also be a good option for young people with Type 1 diabetes. A pump can deliver a steady supply of insulin, even for children and others who might have trouble sticking to a schedule for insulin injections.

Difference Between Traditional and Patch Insulin Pump:

- Traditional insulin pumps push insulin from a chamber within the pump through tubing to a site on the skin that is connected to a smaller flexible plastic tube (cannula). The cannula is a few millimetres long and

delivers the insulin underneath your skin.

- Insulin patch pumps also use a flexible plastic tube (cannula) under the skin, but the insulin delivery chamber and the cannula are part of one "pod" that sits in the skin with an adhesive patch. You can place the patch directly on your belly or arm. There is no external tubing with a patch pump, and it's controlled wirelessly with a handheld controller.
- The tubing and cannula are removed and replaced every two to three days. A healthcare provider called a Diabetes Care and Education Specialist will show you how to do this.
- Common insulin pump brands include:
- Medtronic (MiniMed™)
- Omnipod®
- Tandem

An insulin pump delivers insulin in one of two ways:

- Small, continuous insulin doses (basal insulin).
- Surges of insulin near mealtimes (bolus insulin).
- While using an insulin pump, you still need to check your blood sugar levels. Most people check blood sugar at least four times a day. Or you may use a continuous glucose monitor.
- The pump uses information you enter about your food intake and blood sugar levels to calculate how much bolus insulin you need. The pump then recommends a bolus dose to you and waits for your approval before delivering. In addition, some pumps automatically adjust basal doses based on glucose levels from a continuous glucose monitor.

Risks / Benefits:

- Consistent, adjustable insulin delivery.
- Fewer insulin injections.
- Flexibility and privacy.
- Improved blood sugar levels.

Complications of Insulin Pumps:

Insulin pumps have a low risk of complication. Pumps provide more precise insulin doses than injections, so pumps may carry less risk for people who struggle with calculating their dosages.

Possible cons of using an insulin pump can include:

- Inability to hide the tubing or pump with non-patch styles.
- Higher cost than injections.
- Pumps breaking or tubing becoming disconnected.

There is also a risk of setting up the pump incorrectly. It's crucial to use the insulin pump properly and continue to check your blood sugar regularly. If you don't, you might not get the insulin you need, which can be dangerous and even life-threatening. First time users should ask their health care provider for setup instruction.

Insulin Pens

If syringes and insulin pumps don't work, consider insulin pens for convenient and quick doses of insulin.

Advantages:

- Insulin pens can make taking insulin more convenient because they combine the medication and syringe in one handy unit. Unlike syringes, pens come preloaded with insulin including premixed insulins.
- They are fairly simple to use: simply twist or snap on a new needle, dial a dose, inject the insulin, and throw away the used needle into a needle safe, sharps container. Certain insulin pens are disposable, so you can trash the pen once the insulin is gone or expired, while other pens can be reused once a new cartridge of insulin is inserted.
- Many brands offer pens that are color-coded and use different designs to help you know which type of insulin you're using at a glance. This makes the administration time faster than syringes and vials and they're more portable, too. Plus, some new models come with a digital application, to help you remember when you last injected insulin and how much was administered.
- hey're also less obvious than a vial and syringe, so you can administer insulin discreetly in public.

Disadvantages:

Pens vs. Syringes: The convenience factor of insulin pens means they cost more than syringes. Talk to your insurance provider to see if and how much they'll cover for insulin pens. Compare the costs of other diabetes management tools to see

which one makes the most sense.

Pens vs. Pumps: Despite the benefits, a draw back to using insulin pens (and syringes) is the need to administer insulin more often than if you were to use a pump. If you are particularly active and eat several times a day, you should consider the number of times a day you'll have to administer insulin versus that of a pump, which doesn't require shots.

Picking the right pen:

Pens come in two basic types: disposable and reusable.

- *Disposable pens* are preloaded with insulin and are thrown away after the insulin cartridge is empty or the pen has been in use for 28 or 32 days (depending on insulin type).
- *Reusable pens* work with insulin cartridges that can be loaded into the pen and then tossed away once the insulin is used, leaving the pen ready for the next cartridge. Each pen only works with certain types of insulin, so keep that in mind as you browse pens.
- Even though reusable pens are more expensive at first, replacement cartridges for reusable pens are cheaper than those for disposable, making them about the same price over the long term.

Don't forget the needles

- It's good practice to change needle after each injection or at least once daily. Fresh, sharp needles mean shots that are less painful.
- Most brands of pen needles will fit any of the insulin pens. Pen needles come in different lengths—between 4 and 12 mm—and gauges (thickness of the needle).

Length:

A shorter needle is effective for all body types. You want to aim to deliver the insulin just below the skin without hitting the muscle beneath. When using a shorter needle, administer at a 90-degree angle and do not pinch up the skin. Very thin people and children may want to pinch up the skin and inject at an angle even with a shorter needle to avoid hitting muscle. Hold the needle in the skin for 5 to 10 seconds after you give the insulin so the medication doesn't leak from the site.

Gauge

A higher gauge means a thinner needle and less pain, while a thicker needle may be more painful—length shouldn't really affect pain levels. If you inject a large dose of insulin at one time, a lower gauge (thicker) needle may make for quicker insulin delivery and help you to avoid medication leaking out of your skin.

Storing pens:

For unused pens, be sure to keep them refrigerated. For pens currently using, keep those at room temperature. Extreme temperatures should be avoided altogether, so they should stay out of the freezer. Also avoid leaving them in places where the temperature can get too hot or cold, such as on a windowsill or in a car, too. *Panelist - IV: Ms. Aleena Mathew.*

Smart Insulin:

- Smart insulin is a drug designed to circulate in the body and turn on when its needed and off when it's not needed.
- It is also called glucose responsive insulin. It is a promising treatment option for people with diabetes, helps to maintain blood glucose levels and remain within range during day.

Action:

Smart insulin automatically responds to change in blood sugar levels. The way in which it works is by using a molecule called a *binding element* when blood sugar is low, the binding element attaches to the insulin and prevents it from working, however as blood glucose level rise, glucose molecule frees the insulin from binding element this in turn allows the insulin to lower blood sugar levels back into balance.

BENEFITS:

- Automatically activates or deactivates in response to blood glucose.
- It would be transformative, it ll prevent high and low blood sugars which significantly reduces the need of regular blood glucose testing.
- Decrease the chances of long- and short-term complications.
- It eliminates not just hypo and hyper glycemia but also multiple daily injections.
- It could even make devices like artificial pancreas.
- Gives the patients confidence that they have enough insulin to cover their needs.

Pannelist-V: Ms. Mehfeen

Intestinal Bacteria as a Treatment for Diabetes Mellitus.

- Diabetes mellitus is an emerging health condition globally and is suggested to have a direct connection with the gut microbiota that determines our metabolic outcomes.
- Human body is inhabited by numerous microbesthatre sides on and with in the human body. These micro organisms constitute our micro biota and their complete genome is referred to as microbiome.
- Micro organisms existing from 10 to100 trillion in numbers survive in the adult gut with approximately 1000 species. Most of the bulk of the see microorganisms live in the bowel. The major constituents of gut flora a remainly bacteria a long with few viruses and fungi.
- The impact of gut micro biota in diabetes has been the talk of there searchers for the past few years. The researchers combined experiments on mice with the analysis of large quantities of data from previous research in mice. The scientists gave mice either regular diet or food equivalent to a western diet.
- As there searchers expected, mice fed a western diet developed glucose intolerance and insulin resistance which are the contributing factors to type 2 Diabetes.

They managed to narrow down the list of four bacteria that appeared to playa key role in reducing or intensifying the harmful effects of the western diet:

1. Lactobacillus johnsonii
2. Lactobacillus gasseri
3. Romboutsia ilealis and
4. Ruminococcus gnavu

- They also found that romboutsia ilealis was present in more than 80% of people with obesity which suggests that this micro be might contributeto obesity.
- The authors of the study now wanted to know what happens to the mice's metabolism when they receive the healthy diet and unhealthy diet to see if the bacteria could improve the metabolism of people with type 2 diabetes.
- Different strains of lactobacillus occurinmany fermented foods including certaindairy products such as yogurt.
- Miceona diet that contained R. ilealis showed a reduced glucose tolerance level and insulin production which suggests a diabetes like condition.

Fecal Microbiota Transplant:

- Early in life, the gut micro biota shapes the immune system and regulates metabolism, whereas imbalances in the gut micro biota later in life can cause severe autoimmune disorders.
- Long term restoration of gut micro biota through FMT may be used as a promising therapeutic application for diabetes. it was found to be safe and effective in several human clinical studies.
- FMT has significantly altered the composition of gut bacteria and to affect glycaemic control and insulin resistance in subjects with metabolic syndrome. Therefore, the recent research is more focussed on FMT for type I DM management.
- To serve as donor mice, KM mice were obtained and housed under constant temperature and humidity conditions for 1 week.
- Insulin levels were tested by ELISA and related indexes. We found that insulin resistance and pancreatic islet β-cells were improved after FMT treatment. Meanwhile, the markers of inflammation in the pancreatic tissue were detected by ELISA and immune his to chemistry, which indicated that inflammatory response decreased following FMT treatment.

Panelist-Vii:ms.irin

Diabetic Patches

Introduction

- Glycogen is an extensively branched glucose polymer that animal use as an energy reserve. Glycogen has implication in glucose hemostasis. Glycogen is highly concentrated in the liver all though muscle contain the most glycogen by weight.
- Hypoglycemia is one of the most indications for ZP-glycogen patch. It is a common problem in people living with diabetes who are in insulin and insulin secretagogue (drug that increase insulin secretion by pancreas).
- Micro needle technology as a method of transdermal drug delivery has received a deal of attention in recent years. Micro needles consist of micro-scale projections that are considered to be minimally invasive, yet are capable of bypassing the outer layer of the

skin (stratum corneum) without disrupting nerves and blood vessels thereby inducing no pain or bleeding when applied.

- The micro channel that results from the projection form an unobstructed transport pathway big enough for the large molecule such as protein and peptides to pass through.

Technology

- It is a coin sized (about 5 cms) adhesive polymer patch with micro needles. The pyramid shaped micro needles are 400 microns, wide at the base and 900 microns tall and penetrate stratum corneum, the outer layer of the skin.
- When the interstitial fluids in the skin reach hyperglycemic levels, the phenylboronic acid unit within the polymer matrix promote swelling of needles ae release the insulin preloaded into the matrix.
- Controlled studies on the diabetic's mini pigs showed the patches would maintain the pig's glucose level in a normal range more than 20 hours, according the quality of paper. When the patch is applied the micro needle physically break the outer layer of skin and penetrate the epidermis layer below where the drug coating is dissolved in the surrounding interstitial fluid. the outer layer of the skin provides protection against external microbial pathogens chemical and dehydration and us also the physical barrier to drug intended for transdermal delivery.

Sites of Placing Patches

- Peel off adhesive.
- Place the patches over the naval area.
- Back off the upper arm.
- This is recommended for 14-75 age group, and these patches have to be changed every 7 days.
- Chest and arm are most preferred.

Artificial Pancreas:

- The Artificial Pancreas Device System is a system of devices that closely mimics the glucose regulating function of the healthy pancreas.
- It senses the blood glucose level, determining the amount of insulin needed, and then delivering the appropriate amount of insulin.
- Sometimes an Artificial Pancreas Device System is referred to as' Closed Loop System', an' Automated Insulin Delivery System', or an 'Autonomous System for Glycemic Control'.
- The first hybrid Closed Loop System, the Medtronic's 670G System is the first FDA approved artificial pancreas. The FDA approved it for treating Type1 Diabetes in people age 14 and older. The Artificial Pancreases hit the market in 2016.

Function / Mechanism of Artificial Pancreas Device System:

- Monitors Glucose levels
- Hyperglycaemia
- Delivers insulin Monitors Glucose levels Hypoglycaemia
- Do not deliver insulin

Components of Artificial Pancreas:

There are 4 components of Artificial Pancreas;

1. **Continuous Glucose monitor (CGM):**

- ACGM provide steady stream of information that reflects that Patient's blood glucose levels.
- A Sensor placed under the patient's skin (Subcutaneously) measures the glucose in the fluid around the cells (Interstitial fluid) which is associated with blood glucose levels.
- A small transmitter sends in formation to a receiver.
- ACGM continuously displays both an estimate of blood glucose levels and their direction and rate of change of these estimates.

2. **Continuous Glucose monitor receiver:**

- CGM Monitor displays the update reading as a graph and tends minutes by minutes and translate the reading from USB to Bluetooth.
- The CGM receiver was inserted into the translator, which translated a serial USB protocol into a Bluetooth communication protocol.

3. **Control Algorithm device:**

- A control Algorithm is a software embedded in an external processor (Controller) that receives information from the CGM and performs a series of mathematical calculations.
- Base do n the se calculations, the controller sends dosing instruction to the in fusion

pumps.

- The control Algorithm can brunon any number of devices including an insulin pump, Computer, Smartphone or Tablet.

4. Insulin Pump:

- Based on the instructions sent by the controller, an infusion pump adjusts the insulin delivery to the tissue under the skin.

Types of Artificial Pancreas System:

There are several types of artificial pancreas systems. They include:

1. Threshold suspend and predictive suspend systems:

- *The threshold suspends and predictive suspend systems* can temporarily stop or "suspend" delivering insulin if blood glucose level gets low.
- *The threshold suspend system* stops delivering insulin when blood glucose level drop store set level.
- *The predictive suspend system* calculates blood glucose level and will stop delivering insulin before blood glucose level gets too low. Neither system automatically increases insulin doses.

2. Insulin only systems:

- Insulin only systems keep blood glucose level with in target range by automatically increasing or decreasing the amount of insulin delivered to body base do CGM values. Insulin-only systems can increase insulin doses if blood glucose level is higher than target range.
- One type of insulin-only system is the hybrid system. The hybrid insulin-only system automatically adjusts insulin doses in response to CGM values. But one must still count carbohydrate levels and calculate insulin doses for all meals and snacks.

3. Dual hormone systems:

- Researchers are currently developing and testing systems that use two hormones insulin to lower glucose levels and glucagon to raise blood glucose levels.
- Using two hormones to control blood glucose is similar to the way the pancreas works in people who do not have diabetes. These systems may be able to tightly control glucose levels without causing hypoglycemia.

Advantages

- Less of burden on Diabetics to maintain blood glucose levels.
- Blood glucose levels maintained lessen future costly complications for Diabetics.
- Potential life enhancer for patients with diabetes.
- The continuous blood glucose monitor predicts again slow and high blood glucose levels.
- One step closer to complete cure for Diabetics.

Disadvantages

- Nota complete cure for Diabetics.
- Artificial Pancreas is an external device that must be carried and connected at all times.
- Difficult for athletic Diabetics who play contact sports to maintain device connected.
- Still need to supplement the machines and maintain them.
- Artificial Pancreas potential has life threatening risks of patient with diabetes if it were to malfunction.

Immunotherapy as a Vaccine for Type 1

- Immunotherapy or biological therapy is treatment of disease by activating or suppressing immune system. Immune therapy is mostly known as modern treatment for allergies where a person is exposed to a small amount of what they are allergic train order to train immune system to tolerate it.
- The principle of modulating immune system to either attack or tolerate specific target has gained a lot of recognition in recent years.
- As autoimmune disease is directly caused by the immune system, immunotherapy have started being investigated as an approach to treat a number of different autoimmune condition, among type 1 diabetes.
- For decades, type 1 DM treatment has focused on treating the condition, mainly with insulin. In recent years, however the rapies that target immune system have gained more and more tract in their potential to delay or prevent type 1 dm.
- You may have heard about a new drug called talizumab, which has gained much excitement due to its potential to target immune system and delay a diagnosis of type 1 for two years or more.

- A vaccine known as Diamyd, while not as far along as a potential immunotherapy for type 1 dm.

Aim: The Diamyd vaccine aims to stop the destruction of insulin producing beta cells that lead to T1D.

All About Vaccine:

- The active ingredient in the vaccine is GAD65 (glutamic acid decarboxylase-65), an enzyme that occurs naturally in the pancreatic beta cells that helps them work properly and continue producing insulin. A majority of people with T1D have GAD auto anti bodies that target this enzyme, leading the immune system to attack the cells that make insulin, shutting off insulin production.
- Diamyd's vaccine supplements the GAD65 enzyme, aiming to stop this destructive process. It could thwart or delay the on set of T1D by helping the beta cells continue to produce insulin.
- In earlier clinical trials, the Diamyd vaccine was injected directly into the lymph nodes of children and young adults (ages 12 to 24) who had been diagnosed with T1D within the past 6 months. They received three or four injections over the course of 15 months. Results showed a "significant effect on C-peptide retention," meaning it preserved or improved insulin secretion in the body.
- In the upcoming Phase III trials, subjects will be randomized to receive either three injections of the Diamyd vaccine or three injections of a placebo one month apart. The outcomes will be measured after 24 months. Based on efficacy data from previous trials, the company is confident that C-peptide levels will be preserved, and participants will see lower A1C results (indicating improved blood sugar levels).
- Indication: Diamyd is indicated for individuals recently diagnosed with type 1 diabetes who carry the genetic HLA DR3-DQ2 haplo type.
- This is a randomized, placebo-controlled phase II study to investigate if a prime and boost of 20ug Diamyd® (rhGAD65 formulated in Alhydrogel®), administered subcutaneously four weeks apart, is safe and can preserve beta-cell function in children and adolescents with type 1 diabetes with diabetes diagnosis duration less than 18 months at intervention.

Objective

The objective of *Diagnode*-3 is to evaluate the efficacy and safety of three intranodal injections of 4 µg of Diamyd compared to placebo, along with oral Vitamin D supplementation, to preserve endogenous beta cell function and influence glycemic parameters in adolescent and adults recently diagnosed with T1D carrying the *HLA DR3-DQ2* haplotype.

REFRENCES

1. Y.f.wang, And W.jia, Continuous Glucose Monitoring, 2018. Published By Springer Singapore
2. Thomas Martens, Roy W.Beck, Ryan Bailey, et al, Effect of Continuous Glucose Monitoring on Glycemic Control in Patients With Type 2 Diabetes Treated With Basal Insulin, JAMA network,2021,doi:10.1001/jama.2021.7444, https://jamanetwork.com/journals/jama/fullarticle/2780593.
3. American Journal of Nursing, Diabetes Update: Continuous Glucose Monitoring Yields Better HbA1C Control, 2021 - Volume 121 - Issue 9 , Doi: 10.1097/01.NAJ.0000790580. 11606.cd.
4. https://journals.lww.com/ajnonline/Fulltext/2021/09000/Diabetes_Update__Continuous_Glucose_Monitoring.8.aspx.
5. W. RudolfSeitz,Continuous Glucose Monitoring Sensors: Past, Present and Future Algorithmic Challenges, Pub med, 2016, Doi: 10.3390/s16122093.
6. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5191073/#:~:text=CGM%20sensors%20are%20composed%20of,and%20is%20aimed%20at%20transmitting.

WEB LINKS

1. https://my.clevelandclinic.org/health/drugs/11444-glucose-continuous-glucose-monitoring
2. https://agamatrix.com/blog/continuous-glucose-monitoring/
3. https://www.niddk.nih.gov/health-information/diabetes/overview/managing-diabetes/continuous-glucose-monitoring#:~:text=Special%20Requirements%20Needed%20to%20Use,days%2C%20depending%20on%20the%20model.
4. https://www.apollo247.com/blog/article/

continuous-glucose-monitoring-how-does-it-help.

5. https://www.healthline.com/diabeticsmine/diabeticdeviceadhesive#how.common-is-it

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Effective of STP on Knowledge Regarding the Management of Hemophilia

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Abstract

Aim: A study to assess the effectiveness of structured teaching programme on knowledge regarding the management of haemophilia among mothers of children with haemophilia.

Objectives: The objective of the study to identify the knowledge of mothers. Mothers regarding the management of haemophilia. To determine the association between post-test knowledge score and demographic variables.

Method: The research approach used for the study was one group pre-test post-tests design. The setting was Alkai hospital and Ashwini hospital .Sample for the major study included 50 mothers on the basis of convenient sampling technique method. A structured questionnaire was used to evaluate the knowledge of mothers of children with haemophilia. The reliability of the tool was established by split half technique and the reliability co-efficient were calculated to be 0.95.

Result: The findings revealed that knowledge scores of mothers were inadequate before the administration of STP on management of haemophilia among mothers of children with haemophilia. i.e. mean percentage of pre-test was 39%. The STP helped them to update their knowledge on management of haemophilia among mothers of children with haemophilia. The mean percentage of post-test knowledge of sample significantly increased about nearly 79.95% after administration of STP. The data was analysed by applying Descriptive and Inferential statistics. The results of the study indicated that mothers do not have adequate knowledge regarding management of haemophilia.

Conclusion: The conclusion drawn on the basis of following findings of the study. assessment project has helped the investigator to develop an STP to improve the knowledge on management of haemophilia among mothers of children with haemophilia. The results have also shown that various demographic variable have significant association with respect to the knowledge of mothers regarding management of haemophilia.

Keywords: Effectiveness; Knowledge; Management; Hemophilia.

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INTRODUCTION

Today's children are the citizens of tomorrow, and they are the treasures of nation. Healthy children are the greatest resources and pride of any nation. There is no task more important, so investment in the children development is an investment in the future of the nation. Thus, their health and development must be monitored at every step of their life.[1]

Hemophilia is a rare genetic disorder where

blood does not clot normally. The term hemophilia has Greek roots; the two parts are hemo, meaning blood and philia, meaning a tendency towards. Thus, people with hemophilia have a tendency to bleed. The blood disorder manifests itself in three forms, Hemophilia A, Hemophilia B, and Hemophilia C.[2]

Hemophilia is the blood clotting disorder caused by mutation of the factor VIII and factor IX genes respectively, which lead to defective synthesis or synthesis of dysfunctional factor VIII or IX. Hemophilia A is more common than hemophilia B. Inheritance is X-linked recessive; hence, males are affected while females are carriers. A hemophilic pseudotumor is an encapsulated, chronic, slowly expanding hematoma, due to recurrent hemorrhage; and is seen in 1−2% patients with severe coagulate disorder (less than 1% of normal factor VIII activity). It usually occurs in soft tissues, muscles, tendons and sub periosteal part of bones. The tumor enlarges slowly, develops a fibrous capsule, and can destroy underlying tissues by progressive necrosis.[3]

Hemophilia has been indirectly known about since the second century AD. During those times families did not have to get their baby boys circumcised if they already had two sons die after the procedure. A Philadelphia doctor, Dr. John Otto, wrote about a "haemorrhagic disposition in certain families'. Otto saw that the bleeding disorder was genetic and that males were significantly more likely to have the condition. After some research, he determined that a woman who settled in Plymouth in 1720 was the likely source of the disorder. In 1828, Hoff was the first to use the term haemophilia when he was describing its symptoms and the conditions. In England, hemophilia plagued the royal family because Queen Victoria (1837-1901) was a carrier of the disorder. She passed haemophilia on to one of her sons, and two of her daughters became carriers. When her daughters married royalty from other countries, haemophilia was then passed into the ruling families of Russia, Spain and Germany.[4]

A person who has hemophilia is lacking a sufficient amount of a certain protein, also known as clotting factor. In order for proper blood coagulation to occur, the body's clotting factors work to form a blood clot. When a blood vessel is injured a blood clot is needed to stop the vessel from bleeding. Blood platelets form the clot and the clotting factors help the platelets clump and stick together to cover the injury and stop the bleeding. When the clotting protein is not present, clotting occurs at a much slower rate and sometimes will not happen at all. A seemingly minor or small injury to a person with hemophilia can take much more time to heal because of the slower rate of coagulation. Fortunately, there are injections that people with hemophilia can take to normalize the clotting process.[5]

Though Hemophilia is a hereditary disorder, without proper treatment it will leads to serious damage to limb and joints function within the first one to two decades of life. This isdue to joint mobility, contractures, muscle atrophy and chronic pain. Certain serious complications can further complicate the management of Hemophilia. Between 10-20% of people with Hemophilia A. and 2-3% ofthose with Haemophilia. develop inhibitors deficient factor. Such patients do not respond to usual replacement therapy.[5]

As the mothers are in close interaction with their children and they are in better position to identify the health problems of the children. As a part of this, mothers have to be given adequate orientation in early diagnosis of common health problems of children. Thus, they will be a dynamic force, instrumental and indispensable to health team for promoting health and preventing diseases. This can play a major role in the early detection and treatment of disease.

Need for the Study

Usually, mothers are more involved than fathers in the daily care of a chronically ill child. This is also the case in parents of children with hemophilia. Majority of fathers accompanied their child to clinical consultations regularly. Deeper involvement in home based care might result in different coping and higher levels of illness related stresses and strains for mothers. Mothers of children with hemophilia are more depressed and anxious than fathers.

About 80% of hemophilia patients have hemophilia A, which is caused by a deficiency in clotting factor VIII. The other 20% have hemophilia B, caused by a deficiency in factor IX. Hemophilia leads to improper clotting, thus causing patients to suffer from frequent spontaneous bleeding episodes.[6]

Here presents the data on survival and morbidity of people with Hemophilia in India. India has a factor Vlll usage rate of 0.01 international units per capita. While the USA has a factor Vlll usage of 3.4 IU per capita. Nearly 12,000 persons with hemophilia were nationwide registered in India, with 1,800 patients were identified in Karnataka, 44% were under 15 yrs of age, 35% were between

15 and 30 yrs, 16% were between 30 and 50 yrs and only 5% were above 50 yrs of age.[7]

Signs and symptoms of hemophilia vary depending on how deficient are in clot-forming proteins called clotting factors. If levels of deficient clotting factor are very low, will experience spontaneous bleeding. If levels of deficient clotting factor are slightly to moderately low, will bleed only after surgery or trauma. Excessive unexplained bleeding or bleeding easily can be caused by numerous diseases including bleeding disorders and several severe diseases (e.g. Leukemia). Any type of bleeding is a severe symptom that needs prompt professional medical diagnosis.[8]

When modern medicine finds a way to treat a medical condition, people often think that the problem is solved. But it is necessary to find ways to get that treatment into the hands of those who need it. For example, new research from North Carolina State University shows that much more needs to be done to help get existing treatment to hemophilia patients in the developing world. So, there is a need for implementing actions to assist the patient and family members of the same disease.[9]

Quality of life in parents of children suffering from Hemophilia may be diminished by the illness burden experienced in daily life and by non-adaptive ways of coping. A study was conducted to examine the relation between parent's quality of life, their perceived psychosocial strains and ways of coping, and to compare parent's outcome to other pediatric illness groups. The parents are concerning with the quality of life, psychosocial, coping strategies, needs and illness parameters.

This study includes comparison groups such as parents of children with Juvenile idiopathic arthritis (n=161) and parents of children with type 1 Diabetes (n=69). Compared to parents from other pediatric illness, the parents of children with Hemophilia experience more impact on their quality of life and psychological strains. Quality of life was predicted by the coping strategy, improving marital relationship, emotional strains and worries concerning future. Parents reported a pronounced need for further information on comprehensive management on Hemophilia. In psychological care of families with a child suffering from Hemophilia, reducing psychological strains and strengthening adaptive coping strategies may be preventive intervention for improving the quality of life.[10]

Mathews V, Nair SC, founds that data are limited on inhibitors in people with hemophilia in developing countries. There is a perception that the overall prevalence of inhibitors, ranging from 7 to 19% in different reports, may be lower in these countries as compared with that reported from developed countries. The genetic or other environmental factors also contribute to this need for further study. There is a need to develop laboratory infrastructure and establish quality control programs for laboratory tests for inhibitors in developing countries. Significant individualization of approach to management is therefore required depending on the available resources, particularly with regard to the use of bypassing agents. The limited data on immune tolerance induction with some low dose regimens deserve further study. Even in resource constrained environments, education and a policy of systematic screening of patients associated with judicious use of bypassing agents.[11]

As the demographical variables shows the emerging need for conducting a serious study to find the prevalence of hemophilic cases and to implement actions to improve the knowledge of mothers to assist their children to meet the daily activities in challenging life.[12]

Thus the researcher found that it is a importance for providing knowledge and contributing to the individual and for their family who faces the secondary problems of Hemophilia.

Objectives

The main objectives of the present study are mentioned here.

Objectives of the Study

- To assess the existing knowledge of mothers regarding management of Hemophilia in selected hospitals at Akluj.
- To assess the post-test knowledge score regarding the management of Hemophilia.
- To evaluate the effectiveness of structured teaching programme regarding management of Hemophilia by comparing pre- test and post-tests knowledge score.
- To find out the association between the post-test knowledge score with the Demographic variables.

Operational Definitions

- *Evaluate:* In this study evaluate refers to determine the knowledge gained by the mothers regarding management of Hemophilia after structure teaching programme.
- *Effectiveness:* In this study it refers to

significant gain in knowledge as determined by significant difference in pre and post-test scores of mothers regarding management of Hemophilia.

- *Structured Teaching Programme (STP):* In this study STP means a well prepared teaching programme designed to provide information to mothers regarding management of Hemophilia in selected hospitals
- *Knowledge:* In this studyknowledge refers to the correct responses of mothers to the items in the self-structured interview regarding management of Hemophilia.
- *Hemophilia:* It is a congenital bleeding disorder caused by the genetic lack of factor Vlll (antihaemophilic factor) and factor lX (Christmas factor).

Delimitations

- This study will be limited to only mothers of children with hemophilia.
- Data collection is limited to mothers who are willing to participate in the study.
- The mothers who will be present during data collection.

Hypotheses

H_1: There is a significant difference between the pre and post-test knowledge scores of the mothers regarding management of Hemophilia.

H_2: There is a significant association between the post-test knowledge scores of the mothers and the selected demographic variables.

Research Methodology

Research Approach: The approach adopted for this study is Evaluative research.

Research Design: In the present study "one group pre-test, post–test design" was selected which is a pre-experimental design were selected.

Variables Under Study

Dependent Variable: In this study knowledge of mothers on management of hemophilia is the dependent variable.

Independent Variable: In this study independent variable was structured teaching program regarding management of hemophilia.

Research Settings: This study was conducted at Alkai nursing home and Ashwini Hospital, Akluj.

Population: In the present study population includes mothers of children with hemophilia at the time of data collection in selected settings at Alkai nursing home and Aswini Hospital.

Sample: The sample comprised of 50 mothers of children with AlkaiNursing home and Aswini Hospital.

Sample Size: Study includes A sample of 50 mothers of children with hemophilia.

Sampling Technique: Convenient non-probability sampling technique which was found appropriate for this study.

Sampling Criteria

Inclusion Criteria:

- Selected mothers of children with Hemophilia admitted in selected hospitals.
- Mothers who are willing to participate in the study.
- Mothers who are available at the time of data collection.

Exclusion Criteria:

- Mothers who are not co-operative.
- Mothers who are not available during the study.
- Mothers of children not suffering from hemophilia.

Method of Data Collection:

Data Collction Tool: The purpose of the study was to assess the level of knowledge of mothers regarding management of hemophilia, a structured knowledge questionnaire was found appropriate for collection of the data.

Development of Tool: In this study the researcher used structured knowledge questionnaire. The tools were prepared on the basis of the objectives of the study.

Description of the Tool

The structured interview schedule consists of two parts.

Part I: Demographic Performa

The characteristics included; Age, Gender, Education, Residential Area, Family Income, Familial Hemophilic History, Type of Family and Source of Information of mothers of children with hemophilia cases.

Part II: Structured knowledge questionnaire.

It consists of 44 items divided into 5 areas

All the items were multiple choice questions, which has 3 alternative responses. A Score value of (1) was allotted to each correct response. The total knowledge score was 50 in positively stated items the score for yes is 1 and for No is 0. In negatively stated items the score for Yes is 0 and for No is 1.

Data Collection Procedure

Prior written permission was obtained from the medical superintendent and Nursing Superintendent of Alkai nursing home and Ashwini Hospital. The samples were selected by convenient sampling. The purpose of the study was explained to them and informed consent was obtained. The structured knowledge questionnaire was administered for 5 mothers in first day, 10 mothers in second day, 10 mothers in fourth day, 8 mothers in fifth day at Alkainursing home and on the same day for each group STP was administered. The next day structured knowledge questionnaire was administered in Ashwini Hospital 6 mothers in first day and 5 mothers in second day, 6 mothers in third day on the same day from which the data was collected. On the same day STP was administrated for those mothers, and then 10 minutes was allotted for discussion. After 7 days of STP, post-test was conducted with the same questionnaire for the same group of mothers of children with haemophilia at both Alkai nursing home as well as Ashwini hospital to assess the effectiveness of STP.

Plan For Data Analysis

The data collected in the present study was analyzed by computing the standard deviation, mean and mean percentage.

Protection of Human Rights

1. Permission for the study was obtained from the Medical and Nursing Superintendent of a Selected Hospital
2. An Informed consent was also obtained from the respondents after proper explanation about the purpose, usefulness of the study and assurance given about the confidentiality of their responses.

RESULTS

The data has been analyzed and interpreted in the light of objectives and hypothesis of the study.

Organization of Findings:

The data collected from the mothers were organized, analyzed and presented under the following headings:

- Section I: Description of sample characteristics.
- Section II: Assess the level of knowledge.
- Section III: Evaluate effectiveness of structured teaching program.
- Section IV: Association between the demographic variables and knowledge of mothers.

Section I: Description of sample char-acteristics.

The age distribution of mothers who had participated in the study. 15 mothers are in the age group of 21-25 yrs. 20 mothers are in the age group of 26-30 yrs. remaining 15 are in the age group of above 30yrs. The maximum participants are from the age group of above 26-30 years and the least number of participants are in the age group of 21-25 and >31 years.The gender of participants in the study. About 35 responded as yes and 15 responded as no were participated in the research study. Education distribution of mothers.[35] mothers are primary education holders. 6 mothers are matriculation holders. Remaining 9 are graduate holders. The residential area distribution of mothers.[20] mothers are vegetarian and 30 mothers are non-vegetarian.The family income distribution of mothers. 30% mothers has got primary health centre, 20% mothers have got private hospitals and 50% mothers has got government hospital services. Familial homophilic history distribution of mothers.[10] mothers shows no history of haemophilia and 40 mother's shows history of hemophilia.20% mothers are from urban and 80% mothers are from rural areas. Source of information distribution. 30 sources got from newspaper and magazine and 20 sources from radio and television.

Section III: Evaluate Effectiveness of Structured Teaching Programme by Comparing Pre and Post-Test Knowledge Score

Comparison between pre-test and post-test scores of mother'slevel of knowledge before and after administration of STP. In pre-test 86% mothers had inadequate knowledge on management of haemophilia, 14% had moderate level of knowledge and none of them had adequate level of knowledge. But in the post-test, none of the mothers are inadequate knowledge, 6% mothers are moderate level of knowledge, 94% mothers are adequate level of knowledge regarding management of

Section II: Assessment of knowledge on management of hemophilia among mothers of children with hemophilia before administering STP.

Table 1: Mean, Standard deviation, range and mean score percentage of knowledge of children before administering structured teaching program.

Knowledge	Max Possible Score	Mean	SD	Range	Mean Score%
Management of hemophilia	44	17.16	2.37	15-23	39.00 %

Table 2: Overall knowledge of mothers regarding knowledge on management of hemophilia before administration of structured teaching programme.

Over all level of knowledge	Frequency	%
Inadequate	43	86%
Moderately adequate	7	14%
Adequate	0	0%

Table 3: Mean standard deviation; mean score percentage of knowledge score after the administration of STP.

Knowledge	Max Possible Score	Mean	SD	Range	Mean Score %
Management of haemophilia	44	35.18	2.01	34-39	79.95 %

hemophilia.

Section IV: Association between the demographic variables and knowledge of mothers regarding management of hemophilia.

Association between the Age and the knowledge of mothers:

A total of 21 mothers were below median and 29 mothers were above median. Calculated $\chi 2$ Value was found to be 2.8, which is less than table value with p-value > 0.05. Hence accept null hypothesis i.e. there is a no significant association between age and post-test knowledge of mothers of children with hemophilia.

Association between previous knowledge and the Knowledge of mothers:

A total of 70% were yes and 30% were no. A total of 27 mothers were below median and 23 mothers were above median. Calculated $\chi 2$ Value was found to be 7.81 which is less than table value, DF = 1 with p-value > 0.05. There is a statistical association between previous knowledge and post-test knowledge of mothers.

Association betweenEducational Qualification and the knowledge of mothers:

The chi-square test was resulted to be no significant at 0.09 (i.e., p< 0.05). Hence accept null hypothesis. There is no association between educational qualification and post-test knowledge of mothers.

Association between availability of health care service and the Knowledge of mothers:

The result of availability of health care service and knowledge. The chi-square test was resulted to be significant at 0.01 (i.e., p< 0.05). So there is a statistical association between availability of health care service and post-test knowledge of the mothers.

Association between dietary pattern and the Knowledge of mothers:

The chi-square test was resulted to be non-significant at 0.01 (i.e., p< 0.05). So there is no statistical association between dietary pattern and post-test knowledge of mothers.

Association between family hemophilic history and the Knowledge of mothers:

The chi-square test was resulted to be significant at 0.04 (i.e., p< 0.05). So there is a statistical association between family hemophilic history and

post-test knowledge mothers.

Association between residential area and knowledge of mothers:

The chi-square test was resulted to be non-significant at 0.04 (i.e., p< 0.05). So there is no statistical association between residential area and post-test knowledge.

Association between source of information and knowledge of children:

Chi-square test was resulted to be significant at 0.09 (i.e., p< 0.05). Hence accept H2 hypotheses. There is an association between source of information and post-test knowledge of mothers.

CONCLUSION

On the basis of the findings of the studyto evaluate the effectiveness of Structured Teaching Program on knowledge regarding management of hemophilia. The pre-test showed that knowledge of mothers regarding management of hemophilia was inadequate in all areas. STP tested in this study was found to be effective in improving the knowledge of mothers participated in the study.The structured teaching programme is an effective method in improving the knowledge of mothers.It indicates the importance of frequent education programs to update the knowledge regarding management of hemophilia.

The findings of the study can be used by nurse educator to educate the student nurses, which help them to provide an effective nursing care and to practice the management of hemophilia while caring a hemophilia patient.

Limitations

The limitations of the present study were

1. The study was confined to small number of subjects about 50 mothers of children with hemophilia and was conducted on a convenient sampling, in a selected hospital, which limits the generalization of findings.
2. A structured knowledge questionnaire was prepared for data collection, which restricts the amount of information that can be obtained from the respondents.
3. No attempt was made to do follow up of mothers.
4. The study lacked control group that did not receive any specific teaching to allow the researcher to test the increase on mother's knowledge without STP.

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REFERENCES

1. Karunanithi.et al. Introduction to hemophilia", Oman Journal of Ophthalmology:2009: 86-88.// www.ojoonline.org/article.asp?issn=0974-620x.
2. World Federation of Hemophilia. available from http://www.wfh.org/2/1/1_1_3_History Hemophilia.htm.(2006).
3. Alok Srivastava. A book on management of Hemophilia, Hemophilia federation:2003:5-6.
4. http://pharmalicensing.com/public/users/login/?height=210 &width=500.
5. S. Wiedebusch, H. Pollmann.Quality of life, psychosocial strains and coping in parents of children with hemophilia, Original Article Quality of life, Hemophilia (2008), 14, 1014–1022.
6. http://www.mayoclinic.com/health/hemophilia/DS00218/D Section.symptom
7. http://www.sciencedaily.com/releases/2009/11/091116085049.
8. Mathews V, Nair SC,(2010) Management of hemophilia in patients with inhibitors: the perspective from developing countries available from http://www.ncbi.nlm.nih.gov/pubmed/20169519.
9. Dai J, Lu Y, DingQ, WangH, Xi X, Wang (2011) The status of carrier and prenatal diagnosis of haemophilia in China. available from http://www.ncbi.nlm,nih.gov/pubmed/21910785.
10. Tasleem Raza S, Husain N, (2009) Screening for hemophilia A carriers: utility of PCR-RFLP—based polymorphism analysis in Lucknow, India available from http://www.ncbi.nlm.nim.gov.pubmed/19150994.
11. Hill M, Compton C, Lewis C, Skirton H, Chitty LS,(2011) Determination of fetal sex in pregnancies at risk of hemophilia in United Kingdom, available from http://www.ncbi.nlm.nim.gov. PMID:21951674.
12. Gater A, Thomson TA, Strandberg-Larsen M, (2011) Hemophilia B: impact on patients and economic burden of disease in United Kingdom, available from http://www.ncbi.nlm.nim.gov. PMID:21833450.
13. Emiliani F, Bertocchi S, Potì S, Palareti L, (2011) Process of normalization in families with children affected by hemophilia in Italy available from http://www.ncbi.nlm.nim.gov. PMID:21810993.

14. Scalone1, L. G. Mantovaniet al,(2010) Quality of life is associated to the orthopedic status in hemophilic patients with inhibitors in Italy available from http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2516.2006.01204.x/full.
15. Kasper CK, Lin JC, (2006). Prevalence of sporadic and familial hemophilia available from http://www.ncbi.nlm.nih.gov/pubmed/17212731.
16. Wong T, Recht M,(2017) Current options and new developments in the treatment of haemophilia in USA .Available from http://www.ncbi.nlm.nih.gov/PMID:21319868.
17. Tasleem Raza S, Husain N, Kumar A, (2009) Screening for hemophilia A carriers: utility of PCR-RFLP--based polymorphism analysis in India. Available from http://www.ncbi.nlm.nih.gov/PMID:19150994.
18. Jayandharan G, Shaji RV, George B, Chandy M, Srivastava A, (2004) Informativeness of linkage analysis for genetic diagnosis of haemophilia A in India in India available from http://www.ncbi.nlm.nih.gov/PMID:15357783.
19. Lee CA, (1998) Towards achieving global haemophilia care-World Federation of Hemophilia programs in London . available from http://www.ncbi.nlm.nih.gov/PMID:9873776.
20. Chi C, Lee CA, Shiltagh N, Khan A, Pollard D, Kadir RA, (2008) Pregnancy in carriers of hemophilia in London available from http://www.ncbi.nlm.nih.gov/PMID:17941828.
21. Sterling L, Nyhof-Young J, Blanchette VS, Breakey VR, (2011) Exploring internet needs and use among adolescents with haemophilia: a website development project in Canada available from http://www.ncbi.nlm.nih.gov/PMID:21797947.
22. Pandey GS, Phadke SR, Mittal B, (2002) Carrier analysis and prenatal diagnosis of hemophilia A in North India. Available from http://www.ncbi.nlm.nih.gov/PMID:226014.
23. Madan N, Rathnam A, Bajaj N,(2011) . Treatment of an intraoral bleeding in hemophilic patient with a thermoplastic palatal stent - A novel approach in India available from http://www.ncbi.nlm.nih.gov/PMID:22096778.

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[1] Flink H, Tegelberg Å, Thörn M, Lagerlöf F. Effect of oral iron supplementation on unstimulated salivary flow rate: A randomized, double-blind, placebo-controlled trial. J Oral Pathol Med 2006; 35: 540–7.

[2] Twetman S, Axelsson S, Dahlgren H, Holm AK, Källestål C, Lagerlöf F, et al. Caries-preventive effect of fluoride toothpaste: A systematic review. Acta Odontol Scand 2003; 61: 347–55.

Article in supplement or special issue

[3] Fleischer W, Reimer K. Povidone-iodine antisepsis. State of the art. Dermatology 1997; 195 Suppl 2: 3–9.

Corporate (collective) author

[4] American Academy of Periodontology. Sonic and ultrasonic scalers in periodontics. J Periodontol 2000; 71: 1792–801.

Unpublished article

[5] Garoushi S, Lassila LV, Tezvergil A, Vallittu PK. Static and fatigue compression test for particulate filler composite resin with fiber-reinforced composite substructure. Dent Mater 2006.

Personal author(s)

[6] Hosmer D, Lemeshow S. Applied logistic regression, 2nd edn. New York: Wiley-Interscience; 2000.

Chapter in book

[7] Nauntofte B, Tenovuo J, Lagerlöf F. Secretion and composition of saliva. In: Fejerskov O,

Kidd EAM, editors. Dental caries: The disease and its clinical management. Oxford: Blackwell Munksgaard; 2003. pp 7–27.

No author given

[8] World Health Organization. Oral health surveys - basic methods, 4th edn. Geneva: World Health Organization; 1997.

Reference from electronic media

[9] National Statistics Online—Trends in suicide by method in England and Wales, 1979–2001. www.statistics.gov.uk/downloads/theme_health/HSQ 20.pdf (accessed Jan 24, 2005): 7–18. Only verified references against the original documents should be cited. Authors are responsible for the accuracy and completeness of their references and for correct text citation. The number of reference should be kept limited to 20 in case of major communications and 10 for short communications.

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