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# Self-Care Practice Intervention on Quality of Life among Patients with Type Two Diabetes Mellitus

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***Abstract: Background: Health-related quality of life (QOL) is considered as an important component in the practices among diabetic patients care and management; unfortunately, assessments of diabetes interventions focus mainly on self-care with limited consideration of QOL through education and involvement of the patient. This study aimed to evaluate the effect of self-care practice intervention on quality of life among patients with type two diabetes mellitus. Setting: The study was conducted in the internal medicine department, internal medicine and diabetes outpatient clinic at Zagazig university hospital, Egypt. Material and Method: a quasi-experimental study design. A purposive sample of total 240 study participants, 120 in experimental and 120 in control group based on inclusion and exclusion criteria. Data collection questionnaire were prepared with extensive review of previous literatures. Data collection through two tools includes, interviewing questionnaire sheet included demographic characteristics and diabetic history and the second tool included diabetic patient quality of life assessment questionnaire. Self-Care Practice Intervention on quality of life was taught and practiced by the patients with type two of diabetes mellitus in experimental group and the control group received the routine resident oral instructions. Result: reveals the distribution of mean score wellbeing dimension of quality of life dimension of quality of life of the studied subject. It is showed that there was a highly statistical significant difference between difference study and control groups. Conclusion: patients who were more self-aware about the disease, having knowledge and regularly involved in self-care practices achieve better quality of life and better management of the disease. Recommendation: Providing a written educational nursing program is of great importance for the patients.***

***Keywords: Type 2 diabetes, Self-care, quality of life, Intervention***

## I. INTRODUCTION

Diabetes is a chronic progressive endocrinological disorder of carbohydrate, protein and lipid metabolism, characterized by elevated levels of glucose in the blood (hyperglycaemia) due mainly to absolute insulin deficiency (in type 1) or relative deficiency and insulin resistance (in type 2) ( Jackson., et al., 2014).

Diabetes mellitus is a group of metabolic disorders in which a person develops high blood sugar, either due to inadequate insulin production, or insensitivity of the cells to insulin. The prevalence of the diabetes is increasing at an alarming rate particularly in developing countries. Estimate of global diabetes prevalence predict 6.4%, affecting 285 million adults in 2010, and will increase to 7.7% and 439 million adults by 2030 ( Benjamin., et al., 2017).

The WHO defined QOL as individuals' perceptions of their current situations regarding systematic and cultural values in which they live in and the relationships between these perceptions and goals, expectations, standards, and priorities important for them (Mostafa., et al., 2018). The low cost strategies used in the training of individuals with DM for self-management is health education. As it improves the acquiring of knowledge, encouraging the attitude of adherence beneficial to the disease and treatment, metabolic control, reduction of acute and chronic complications and, therefore, improve QOL. The nursing care goal is to achieve the improvement in QOL of individuals and health education programs can positively add value to the acquisition of knowledge and the adoption of positive attitude towards the disease and treatment, reflecting, therefore, QOL (Asmamaw., et al., 2015).

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Essential health care requirements and facilities for Self-management of diabetes are often inadequate in Egypt and so action is needed at all levels of health care to bridge the gap and to improve health care delivery to people with diabetes. The major components of the treatment of diabetes are: diet (combined with exercise if possible), oral hypoglycemic, and insulin treatment (Mahfouz and Awadalla., 2011).

The importance of self-management skills in diabetes care has been stressed by the American Diabetes Association (ADA) and the Veterans Health Administration (VHA). Patients' ability to understand and carry out their individual treatment regimens is critical to the control of diabetes mellitus. To promote self-management, the treating institution should develop a statement of short-term and long-term goals specific to each patient's needs.

These goals should include the patient's medication use, nutrition plan, lifestyle, monitoring requirements, annual comprehensive dilated visual examination, and podiatry care.

Effective self-management is considered the cornerstone of successful diabetic control, and self-monitoring of blood glucose may have a role in this. (Majra and Acharya., 2009) and (Sarkar., et al., 2008). So, there is a need for all health professionals to rethink current approaches to the concept of self-management in chronic disease management including diabetes. (Abu Sabbah and Al-Shehri., 2013).

Diabetes educational program is essential in preventing complications especially in adult people suffering from diabetes such as retinopathy which is the leading cause of blindness, kidneys (nephropathy) as 10%-20% of patients with diabetes die from renal diseases , nerves (neuropathy) which affect up to 50% of patients with diabetes.( Lewis., et al., 2015) and (Alkaissi., 2013). Self-management education is recommended as a basic component of diabetes management in clinical practice.

The National Standards for Diabetes Self-Management Education and Support define diabetes self-management education as a collaborative and ongoing process intended to facilitate the development of knowledge, skills, and abilities that are required for successful self-management of diabetes. (American Diabetes Association. 2011).

### *A. Significance of the Study*

As the rates of diabetes are increasingly growing and the devastating effects of it on all life dimensions in patients and it necessitate the conduction of research on QOL of these patients. 480 patients had diabetes in internal medicine department and out-patient at Zagazig university hospital in 2017, so this study was conducted to investigate the effects of an educational nursing program on QOL in patients with type two of diabetes mellitus (T2DM). (Mostafa., et al., 2018).

### *B. Aim of the Study*

Evaluate the effect of self-care practice intervention guideline on quality of life among patients with type two diabetes mellitus

### *C. Research Hypothesis*

Patients who will have self-care practice intervention guideline will have good quality of life than those who do not.

## II. MATERIALS AND METHODS

### *A. Research Design*

A quasi experimental design was utilized to achieve the aim of the current study.

### *B. Setting*

The study was conducted in the internal medicine department, internal medicine and diabetes outpatient clinic at Zagazig university hospital, Egypt.

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*C. Sample*

A purposive sample size was calculated using a simplified formula: n=N/1+N($e^2$) total sample=N=(600)=n= N/1+N(e)2 = 240 providing direct which provided by Yamane (1997) to be care to surgical patient at the above mentioned setting, it was equally divided into two groups each has (120) patients, inclusion criteria adult patients free from medical disorders as ( heart disease, surgery, etc….), admitted for diabetic and medical clinic.

*D. Tools of Data Collection*

two tools used to collect data in order to achieve the aim of the study. The researchers developed two tools after reviewing the related literature.

*1) Tool I- Interviewing Questionnaire Sheet*

It included two parts:

*a) Part 1:* patient's demographic data such as age, educational level, occupation, residence, and gender.

*b) Part 2:* diabetic history: Include the following (duration of diabetes mellitus, insulin treatment and chronic illness).

2) *Tool II: Diabetic Patient quality of life Assessment Questionnaire:* It was used to assess quality of life for patients with diabetes mellitus. The tool contain 34 items distributes on four broad domains of QOL. Within each domain, there are several sub domains of QOL. The four main domains are interference with life (12 items), self-care dimension (11 items), wellbeing dimension (11 items) and Concern about illness (11 items).

*E. Field work*

The study was implemented from the period of the first January 2020 to the end of June 2020. The study tools were adapted and designed by the researchers after reviewing the relevant recent literatures. The researchers visited the study setting three days per week, for both intervention and control groups, in the internal medicine department, internal medicine and diabetes outpatient clinic. Procedure An official permission to conduct the proposed study was obtained from director of the university hospital and the head of medical department at Zagazig University Hospital. At initial interview, the researchers introduced herself to initiate line of communication, and explained the nature and purpose of the study.

A pilot study was conducted on 10% of the sample to test feasibility, objectivity, validity and applicability of the study tools.

Patient's agreement for voluntary participation was obtained after the purpose and nature of the study were explained. The researchers filled in tools of the study from the patient using the structured patient interview questionnaire.

The tools were applied on the patients through an interviewing questionnaire. Before that the researchers introduced herself to each patient, explained the purpose of the study and the reason for interviewing. First collection of socio-demographic and medical data was done. The total time for collection the data was about 30 minutes for every patient. For the control group, after taking the patient oral agreement for voluntary participation in the study, the researchers then filled structured patient interview questionnaire, QOL assessment questionnaire. The control group received the routine resident oral instructions. The researchers met the patient in internal medicine and diabetes outpatient clinic after two months for re-evaluating the patient's condition. For the study group, after filling the structured patient interview questionnaire, QOL assessment questionnaire. The researchers explained to the patient the educational program during hospital stay and evaluated patients after two months in internal medicine and diabetes outpatient clinic. The educational program was administered to the patients in three sessions; the duration of each session was about one hour three times weekly, including 15 minutes for discussion and feedback by using lecture for knowledge and videos for practice such as subcutaneous injection and insulin pump. Patients divided small groups according to number of cases of diabetes weekly. First session: The researchers started by introducing herself to the patients telling them aim of the meeting, orient patients regarding the educational program. Contents of this session include: definition of diabetes mellitus, causes of diabetes mellitus and types of diabetes mellitus.

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Second session: summary about what has been discussed in a previous session, objectives of the new session, and contents of this session includes: signs and symptoms of diabetes mellitus, treatment of diabetes mellitus. And the session ended by a summary of its content and feedback from the patients.

Many patients were cooperative and interested in a given topic and asked to continue. Third session: summary about what has been discussed in a previous session, objectives of the new session, and contents of this session include: complications of diabetes mellitus, nursing management of type II diabetes mellitus. The session ended by a summary of its content and feedback from the patients through discussion and asking questions. After ending the sessions, every patient was given a copy of educational program at home.

Evaluation was carried out pre and after two months through introducing tool (I) and tool (II) for all the studied sample "both control and study group" to distinguish between control and study group after application of the educational nursing program and between the initial assessment of the studied group and their assessment after two months from application of the educational nursing program.

1) *Validity and Reliability of the Tool:* Validity test was done by 5 experts from Medical surgical nursing specialty and 2 from neurological consultants. The nurses' knowledge questionnaire sheet reliability were confirmed by Cronbach's alpha coefficient (alpha= 0.923for nurses' knowledge questionnaire & alpha=0.896 for nurses practice checklist tool).
2) *Pilot Study:* A pilot study was carried out on 10% of the total study sample to test the clarity, feasibility and applicability of the tools of the study. Pilot subjects were later included in the study as there was no radical modifications in the study tools.
3) *Administrative and Ethical Considerations:* The researchers explained the purposed of the study and their rights as a study participant, including anonymity and confidentiality, their rights to withdraw from the study at any time. Informed consent was obtained from the patients participated in the current study.

## III. RESULTS

1) Table (1) illustrates personal characteristics of the studied subjects in both study and control groups; it is indicated that 60.8% & 60.0 of their age respectively was above 40 years, with mean of 39.1417±9.75954 &38.5417±9.65619 respectively . In addition 54.2% & 55 % of them were male, more than half of them had a secondary type of education. More over 65.8% & 71.7 % of them were recruited at rural setting. Moreover there was no statistical significant difference between both groups regarding their personnel characteristics.
2) Table (2) reveals the distribution of diabetic history of the studied subject. It is showed that there was no statistical significant difference between both study and control groups regarding Duration of diabetes mellitus, Insulin treatment and History of chronic illness. ($p > 0.05$)
3) Table (3) reveals the distribution of mean score of interference with life dimension of quality of life of the studied subject. It is showed that there was a highly statistical significant difference between difference study and control groups.
4) Table (4) shows the distribution of mean score of self- care dimension of quality of life dimension of quality of life of the studied subject. It is showed that there was a highly statistical significant difference between difference study and control groups.
5) Table (5) reveals the distribution of mean score wellbeing dimension of quality of life dimension of quality of life of the studied subject. It is showed that there was a highly statistical significant difference between difference study and control groups.
6) Table (6): indicates the distribution of mean score of concern about illness dimension of quality of life dimension of quality of life of the studied subject. It is showed that there was a highly statistical significant difference between study and control groups.

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## IV. DISCUSSION

Diabetes education is too important but it should be transferred into action or self-care activities to care the patient.

The aim of the current study was to evaluate the effect of self-care practice intervention on quality of life among patients with type two diabetes mellitus.

The result of the current study support the stated hypothesis that patient with type two diabetes mellitus and have self-care intervention guideline will have better quality of life than these who don't.

As regarding the personnel characteristics of the studied subjects, the present study added that there was no statistical significant difference between both study and control groups.

Regarding age of the studied subjects the present study findings indicated that near two third of them had age above 40 years, with mean of 39.1417±9.75954 &38.5417±9.65619 in both study and control groups respectively .

These findings are disagreed with (Khalid et al.,2014) in KSA in the study to assess " Practice And Perception Of Self-Management Among Diabetics" , who added that ,the age of the studied subjects ranged between 20 and 70 years with a mean of 49.03 ± 13.05.more over more than half of the studied subjects were male, these finding came in the same line with (*Dejina Thapa ,2018), in the study in Nepal to evaluate the* effect of " Self-care activities among patients with diabetes attending a tertiary care hospital in Biratnagar".it was stated that more than half of the studied patients were male.

Regarding the diabetic history characteristics of the studied subjects the present study showed that there were no statistical significant differences between both study and control groups regarding Duration of diabetes mellitus, Insulin treatment and History of chronic illness.

More than half of the studied subjects had a diabetes for more than ten years ago. These finding are agreed with (*Mahfouz & Awadalla ,2011),*in Egypt in the study to " to assess compliance of diabetic patients to diabetes self-Management in rural El Minia " ,it was demonstrated that more than half of the studied participants had a diabetes history for more than five years.

Concerning the effect of the designed self-care practice guideline, the present study findings revealed that there was a highly significant improvement of quality of life among studied subjects included in the study group as compared with subjects in the control group.

These findings came in the same line with (Mostafa et al.,2018) , in Egypt in a study to " to assess effect of educational nursing program on quality of life for patients with type II diabetes mellitus", it was indicated that study group had a high quality of life level as compared with the control group. In addition Sima et al., demonstrated in their study entitled “Effect of Educational Program on Quality of Life of Patients with Heart Failure” that there were significant differences in QOL in experimental group compared to control group.

## V. CONCLUSION

The results of the present study concluded that: according to the control group, there was no statistically significant difference pre and post program in all domains of quality of life scale.

According to the study group there was a highly significant effect of educational program on promotion of quality of life in physical, psychological, and social domains scale.

## VI. RECOMMENDATIONS

Providing a written educational program is of great importance for the type two diabetic patients for improving their quality of life.

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## VII. LIMITATION

No limitation

Table (1): distribution of personnel characteristics of the studied subject

| personnel characteristics | Control group N=120 | | Study group N=120 | | Chi square test | P value |
|---|---|---|---|---|---|---|
| | No | % | No | % | | |
| Age in years | | | | | 0.524 | >0.05 |
| 20-<30 | 24 | 20.0% | 28 | 23.3% | | |
| 30-<40 | 73 | 60.8% | 72 | 60.0% | | |
| 40-50 | 23 | 19.2% | 20 | 16.7% | | |
| Mean ±SD | 39.1417±9.75954 | | 38.5417±9.65619 | | | |
| Gender | | | | | 0.017 | >0.05 |
| Male | 65 | 54.2% | 66 | 55.0% | | |
| Female | 55 | 45.8% | 54 | 45.0% | | |
| Educational level | | | | | 0.817 | >0.05 |
| Illiterate | 20 | 16.7% | 25 | 20.8% | | |
| Read and write | 25 | 20.8% | 23 | 19.2% | | |
| Secondary education | 66 | 55.0% | 62 | 51.7% | | |
| University education | 9 | 7.5% | 10 | 8.3% | | |
| Residence | | | | | 0.950 | >0.05 |
| Rural | 79 | 65.8% | 86 | 71.7% | | |
| Urban | 41 | 34.2% | 34 | 28.3% | | |

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Table (2): distribution of diabetic history of the studied subject

| personnel characteristics | Control group N=120 | | Study group N=120 | | Chi square test | P value |
|---|---|---|---|---|---|---|
| | No | % | No | % | | |
| Duration of diabetes mellitus | | | | | 3.02 | >0.05 |
| Less than 5 year | 14 | 11.7% | 22 | 18.3% | | |
| 5-10 | 23 | 19.2% | 27 | 22.5% | | |
| >10 years | 83 | 69.2% | 71 | 59.2% | | |
| Mean ±SD | 9.87±0.965 | | 9.12±0.238 | | | |
| Insulin treatment | | | | | 0.300 | >0.05 |
| Yes | 38 | 31.7% | 42 | 35.0% | | |
| No | 82 | 68.3% | 78 | 65.0% | | |
| History of chronic illness | | | | | 1.45 | >0.05 |
| Yes | 25 | 20.8% | 33 | 27.5% | | |
| No | 95 | 79.2% | 87 | 72.5% | | |
| Type of chronic disease | | | | | 1.80 | >0.05 |
| Hypertension | 21 | 84.0% | 29 | 87.9% | | |
| Heart disease | 4 | 16.0% | 4 | 12.1% | | |

Table (3): distribution of interference with life dimension of quality of life of the studied subject

| interference with life | Control group N=120 | Study group N=120 | Independent t test | P value |
|---|---|---|---|---|
| | Mean ±SD | Mean ±SD | | |
| 1.Having diabetes complicates my social relationships (friends, companions, couple, etc.) | 1.7000±.54387 | 3.0167±1.00405 | 12.63 | <0.001** |
| 2. Having diabetes makes me feel different | 1.6000±.57101 | 3.0167±1.00405 | 13.43 | <0.001** |
| 3. Having to administer insulin is a daily problem for me | 1.5250±.57923 | 3.2000±.98390 | 16.07 | <0.001** |
| 4. Having diabetes limits my social life and leisure time (eating out, celebrations, travel, etc.) | 1.5333±.53347 | 2.9167±1.00070 | 13.36 | <0.001** |
| 5. Having diabetes has changed my life | 1.7833±.53740 | 3.0250±.99968 | 11.98 | <0.001** |
| 6. Having diabetes complicates my family relationships | 1.5917±.57242 | 2.7417±.96577 | 11.22 | <0.001** |
| 7. I feel limited in my professional life because of diabetes | 1.6000±.49195 | 2.5500±.89677 | 10.17 | <0.001** |
| 8. I have some complications/s of diabetes that limit me physically And therefore worsen my quality of life | 1.7583±.46735 | 3.0750±.99716 | 13.09 | <0.001** |
| 9. Daily life with diabetes causes me added stress | 1.8167±.51829 | 3.4167±.91287 | 16.69 | <0.001** |
| 10. I am worried about others knowing that I have diabetes | 1.7417±.52654 | 2.8667±.99523 | 10.94 | <0.001** |
| 11. Having diabetes limits my sex life | 1.8583±.49017 | 2.8167±.98717 | 9.52 | <0.001** |
| 12. I can lead a normal life with diabetes | 1.8250±.51306 | 3.4750±.87891 | 17.76 | <0.001** |
| Total | 20.3333±3.33389 | 36.1167±4.64755 | 30.22 | <0.001** |

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Table (4): distribution of self-care dimension of quality of life of the studied subject

| self care dimension | Control group N=120 | Study group N=120 | Independent t test | P value |
|---|---|---|---|---|
| | Mean ±SD | Mean ±SD | | |
| 13. I feel satisfied with my daily involvement in the self-care Of my diabetes | 1.7333±.44407 | 2.6750±.94524 | 9.87 | <0.001** |
| 14. My training/knowledge of diabetes helps me to ensure good control | 1.7917±.40782 | 2.7000±.95794 | 9.55 | <0.001** |
| 15. My training in quantifying carbohydrates allows flexibility In my diet | 1.8083±.39526 | 2.5333±.88814 | 8.17 | <0.001** |
| 16.I feel satisfied with how I deal with my diabetes | 1.7750±.50978 | 2.9833±1.00405 | 11.75 | <0.001** |
| 17. I feel motivated with the self-care of my diabetes | 1.8167±.48478 | 2.6500±.94068 | 8.62 | <0.001** |
| 18. I adjust the insulin dose to my diet in order to ensure good control | 1.7500±.43483 | 2.6833±.95251 | 9.76 | <0.001** |
| 19. I feel satisfied with my drug treatment, because it helps control My diabetes | 1.7833±.48824 | 2.7333±.96783 | 9.60 | <0.001** |
| 20. I feel satisfied with my current blood glucose (glycosylated hemoglobin) control | 1.7750±.43892 | 3.3083±.46374 | 26.30 | <0.001** |
| 21.The management of diabetes is normally integrated into my daily life | 1.6583±.51033 | 3.1167±.32237 | 26.46 | <0.001** |
| 22. I consider that I have flexibility and freedom in my diet despite Having diabetes | 1.7000±.49536 | 3.3083±.46374 | 25.96 | <0.001** |
| 23. I find it hard to do the daily controls (blood glucose) | 1.7583±.42989 | 3.2917±.45644 | 26.78 | <0.001** |
| Total | 19.3500±2.58519 | 31.9833±3.68276 | 30.75 | <0.001** |

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Table (5): distribution of wellbeing dimension of quality of life of the studied subject

| wellbeing dimension | Control group N=120 | Study group N=120 | Independent t test | P value |
|---|---|---|---|---|
| | Mean ±SD | Mean ±SD | | |
| 24. I rest my sleep at night is good | 1.9167±.44122 | 3.8000±.40168 | 34.57 | <0.001** |
| 25. I feel well physically | 1.8583±.39526 | 3.4833±.50182 | 27.86 | <0.001** |
| 26. I feel well psychologically | 1.8833±.39286 | 3.4167±.49507 | 26.57 | <0.001** |
| 27. I have other illnesses as a consequence of diabetes that worsen My quality of life | 1.6583±.47626 | 3.4250±.49642 | 28.13 | <0.001** |
| 28. I feel satisfied with the time ,I spend doing physical activity | 1.8417±.42989 | 3.3667±.48391 | 25.80 | <0.001** |
| 29.I consider my quality of life in general to be good | 1.8750±.40089 | 3.4000±.49195 | 26.32 | <0.001** |
| Total | 11.0333±1.18771 | 20.8917±1.27547 | 61.96 | <0.001** |

Table (6): distribution of Concern about illness of quality of life of the studied subject

| Concern about illness | Control group N=120 | Study group N=120 | Independent t test | P value |
|---|---|---|---|---|
| | Mean ±SD | Mean ±SD | | |
| 30. I am afraid of hypoglycemia (drops in sugar level) | 1.7667±.42473 | 3.3750±.48615 | 27.29 | <0.001** |
| 31. I often feel concerned about hypoglycemia | 1.7417±.45827 | 3.2083±.40782 | 26.19 | <0.001** |
| 32.I feel concerned when I have high blood glucose | 1.6083±.49017 | 3.5167±.50182 | 29.80 | <0.001** |
| 33. I often feel concerned about future complications of diabetes | 1.7833±.45251 | 3.1583±.36658 | 25.86 | <0.001** |
| 34. I often feel concerned about having to enter hospital because Of poor diabetes control | 1.8250±.47919 | 3.3833±.48824 | 24.95 | <0.001** |
| Total | 8.7250±1.07658 | 16.6417±1.16530 | 54.66 | <0.001** |

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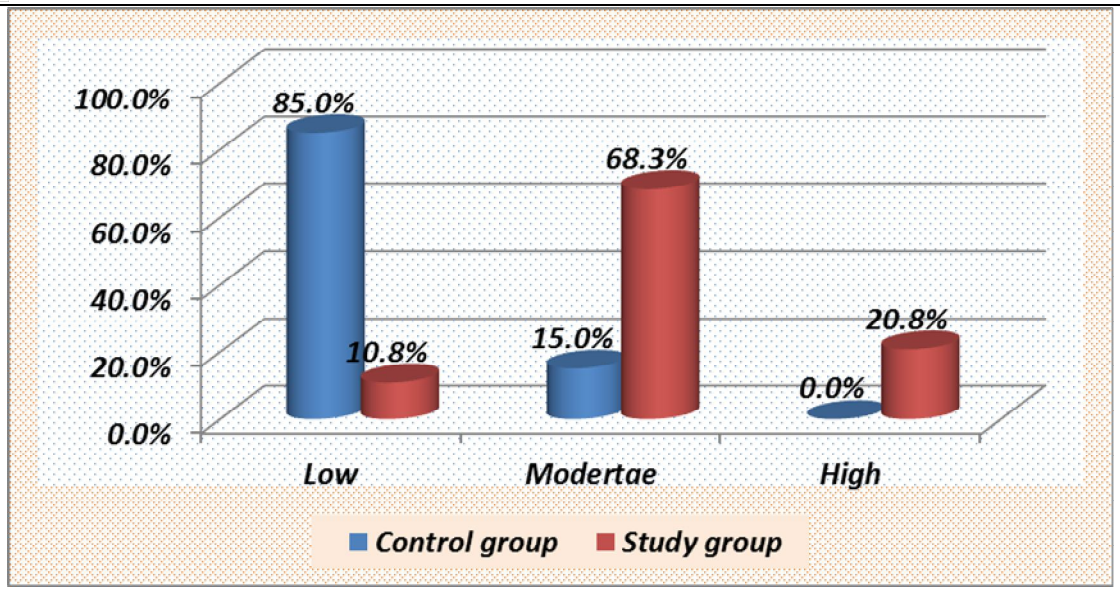



Figure (1): percentage distribution of total quality of life score among studied subjects.

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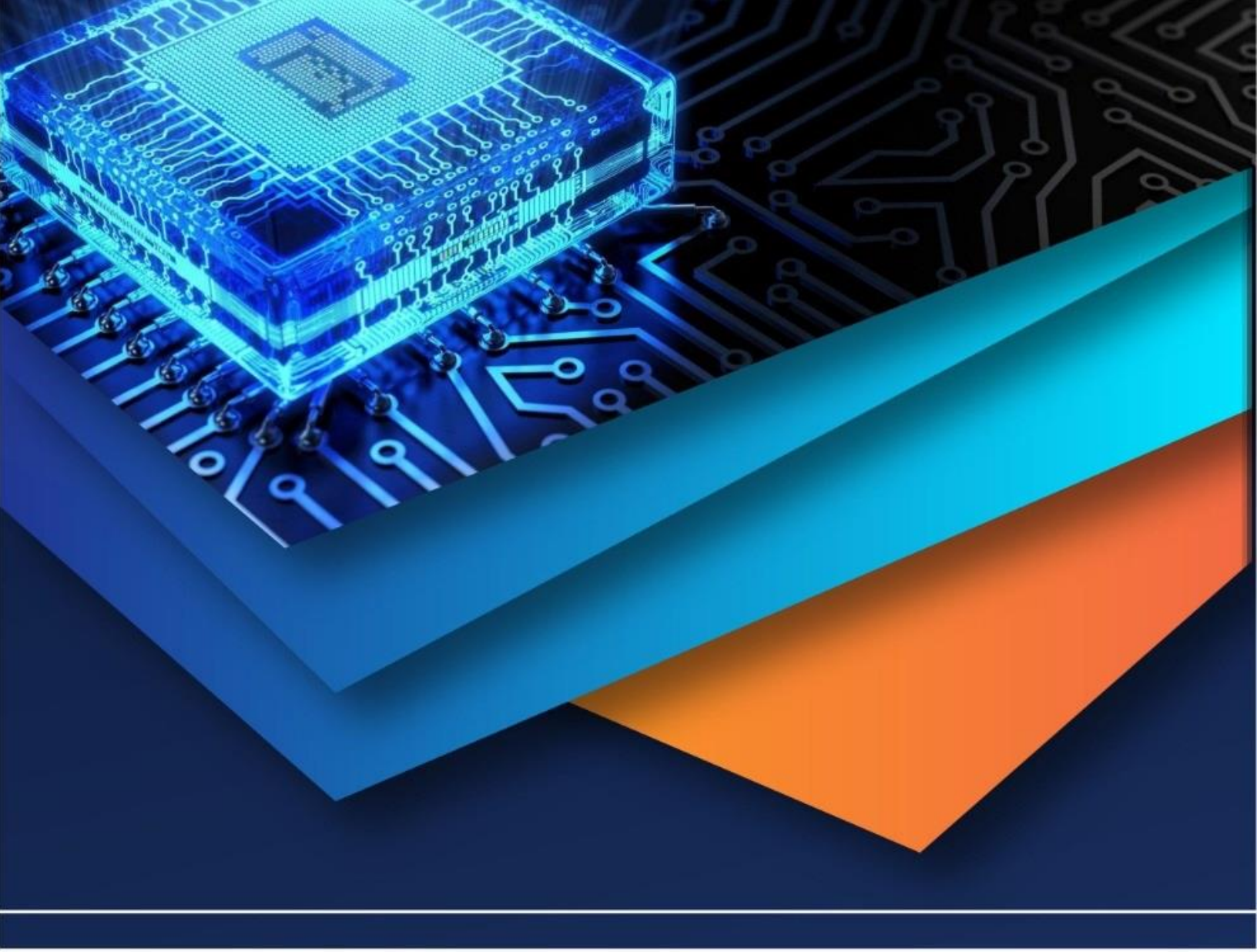
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