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Evaluation of Medication Adherence in End Stage Renal Disease Patients on Haemodialysis in a Tertiary Care Hospital: A Questionnaire Based Study

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ABSTRACT

Background: End stage renal disease (ESRD) is the final stage of CKD, affecting around 7.5 million people globally. Haemodialysis (HD) being the life saving treatment, also has serious impacts on patient's medical, social and psychological well being, leading to medication non-adherence. Medication adherence is a cardinal element of any treatment, which can prevent the incidence of morbidity and mortality. Thus, current research aimed to assess medication adherence in ESRD patients undergoing HD.

Methods: After obtaining IEC approval, this study was initiated in HD unit with 80 eligible patients using a pre validated questionnaire, modified version of Greek-Simplified Medication Adherence Questionnaire for Haemodialysis (GR-SMAQ HD). It evaluates adherence status for 3 domains, namely medication, HD session and Diet/Fluid restrictions. Total score of 8 indicates greater adherence. All collected data were tabulated and analyzed using SPSS 20.0 version.

Results: Out of 80 patients, 58 were male and 22 female, with average age of 46.41 ± 8.02. Assessment of individual domains showed: 91.25% patients had greater adherence for HD session, followed by medication and fluid/diet (28.7% & 22.5%). Based on total scoring, only 7.5% had greater adherence level, remaining 92.5% belonged to moderate/poor adherence level, while no participant had zero adherence. Also showed significant correlation ($P<0.05$) for patients age, employment status and income status.

Conclusion: Thus, result explored that only 7.25% patients had greater adherence level. So, it emphasizes that periodic evaluation on medication adherence by health care workers is highly essential to elevate the treatment success.

Key Words: *End Stage Renal Disease, Haemodialysis, Medication adherence*

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INTRODUCTION

End-stage renal disease (ESRD) occurs due to the inadequate filtration of blood (GFR ≤ 15 mL/min), in final stage of Chronic Kidney Disease (CKD) resulting in irreversible loss of renal function [1]. It is one of leading global health problem affecting around 7.5 million people worldwide and 4.9 to 7 million ESRD patients were needing renal replacement therapy [2]. Renal transplantation is the only gold standard treatment for ESRD [3]. Due to restricted availability of kidney donors and surgery related risks, an alternative therapy called Renal Replacement Therapy (RRT), such as dialysis is considered [3]. Globally, lifespan of 4 million peoples are prolonged due to Haemodialysis (HD), which is the most common form of RRT [4]. Although HD is an life saving treatment, it has various impact on patient's medical (restricted diet & fluid intake, AV fistula related problems, bone metabolism), social (restraining the patients for 3–7 days per week) and psychological well being (needle distress, depression, physical and cognitive impairments) [5]. Thus treatment of ESRD ultimately results in poor quality of life, reduction in daily performance, non-compliance/non-adherence to medication and HD regimen. Out of all above issues, patient's medical adherence is extremely important to achieve a successful treatment [6].

According to W.H.O Medication adherence defined as “the degree to which the person's behaviour corresponds with the agreed recommendations from a health care provider.” As per reports prevalence rate of non-adherence to HD regimen were ranges from 12% to 99%. Many factors culminates into non-adherence such as medication cost, side effects or absence of intended therapeutic effects, lacking of knowledge or not being involved in decisions [7]. Hence, evaluation on medication adherence, brings awareness among HD patients regarding the importance of consuming regular medication is highly essential to reduce further occurrence of morbidity and mortality. Thus, aim of the current study is to Evaluate Medication Adherence in an End Stage Renal Disease Patients on Haemodialysis using Modified Version of Greek Simplified Medication Adherence Questionnaire for Hemodialysis patients (GR-SMAQ-HD).

METHODOLOGY

After obtaining Institution Ethics Committee Approval this Questionnaire based cross sectional study was conducted between the periods of June 2022 to August 2022 in the Haemodialysis unit, in the Department of Nephrology with 80 eligible ESRD patients undergoing Haemodialysis. 19-60 years of age belonging to both genders and clinical diagnosed with ESRD based on KDIGO guidelines were included. Patients having psychiatric illness, indication of Haemodialysis other than ESRD and those who are not willing to give informed consent were excluded. The Modified Version of Greek Simplified Medication Adherence Questionnaire for Haemodialysis patients (GR-SMAQ-HD) was utilized for this study after receiving the proper copyright license from the author concerned. This questionnaire evaluates 3 domains, namely adherence to medication (questions 1, 2, 3 and 4), adherence to HD session (questions 5 and 6) and adherence to Diet/Fluid restrictions (questions 6 and 7). The first 3 questions were dichotomous type (Yes / No), next 5 were Likert scale type. The total inference score ranges from 0-8, higher score 8 indicate greater adherence. Also, demographic data were collected to assess adherence correlation. All collected data were expressed as descriptive statistics and analysis were done using SPSS 20.0 version, considering p value < 0.05 as significant.

RESULT

In current research, total of 80 patients were included based on eligibility criteria. Out of 80 patients, 58 were male and 22 were female (see figure 1). Male were predominant with 72%. Mean age of patients included was 46.41 ± 8.02. Age was categorized into four groups as 21-30 years, 31-40 years, 41-50 years and 51-60 years, among those 41.25% (n=33) patients belongs to 41-50 years, followed by 37.5% (n=30) belongs to 51-60 years and 18.7% belongs to 31-40 years. Least age group involved were 21-30 years (2.5%) and 0% were under 20 years (see figure 2).

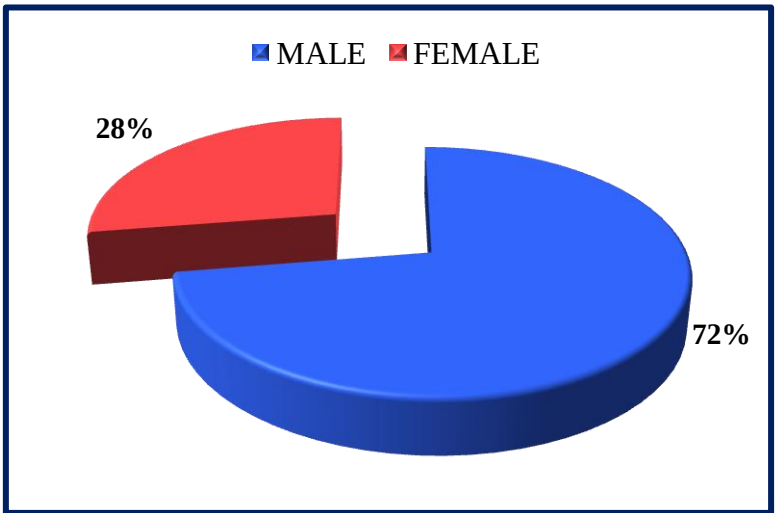

Figure 1 shows gender distribution

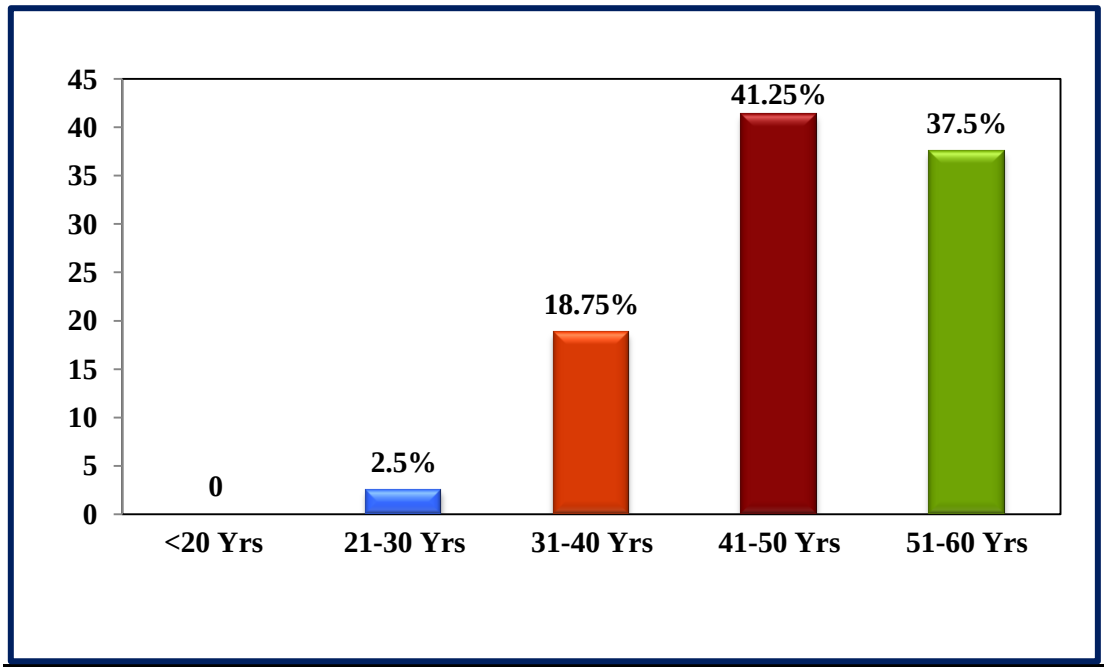

Figure 2: shows age distribution

Among 80 patients 5% (n=4) were unmarried. 96.25% (n=77) patient have hypertension as co-morbid condition followed by that 18.75% (n=15) were diabetic and less than 5% were having other co morbids like hypothyroid, cardiac disease & pulmonary TB, whereas remaining 5% have no co morbid conditions (see figure 3). As per modified kuppuswamy income score 95% (n=76) patients belongs to score 1. On assessing educational status 35% (n=28) patients were finished secondary schooling and almost equally 31.2% (n=25) were uneducated. Only 14 patients were graduated and finished higher education (see table 1). 65% (n=52) patients quitted job due to initiation of dialysis procedure and only 17.5% (n=14) patients continuing job, remaining were unemployed (Housewife, retired & studying), refer figure 4.

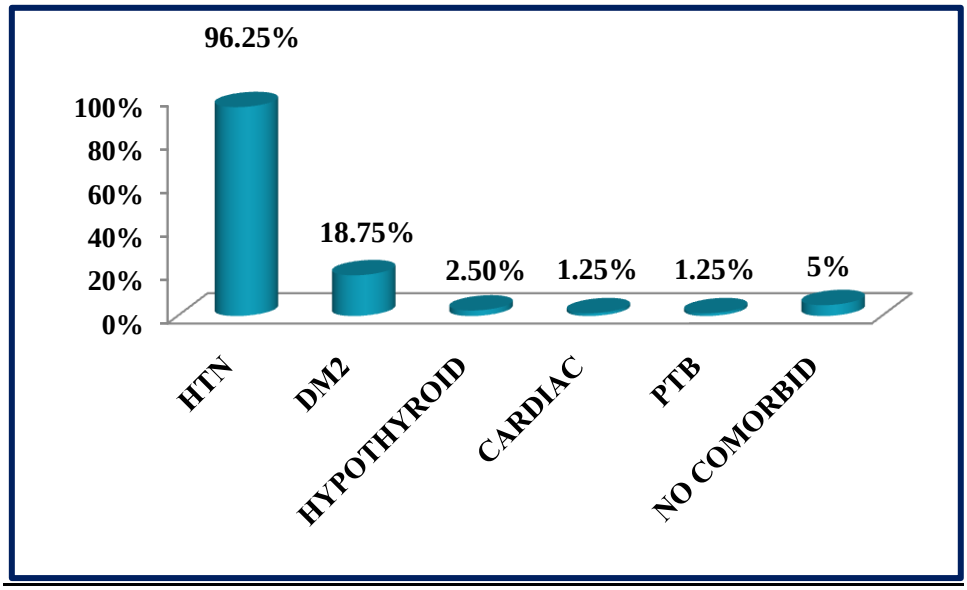

Figure 3 shows co-morbid status of participants

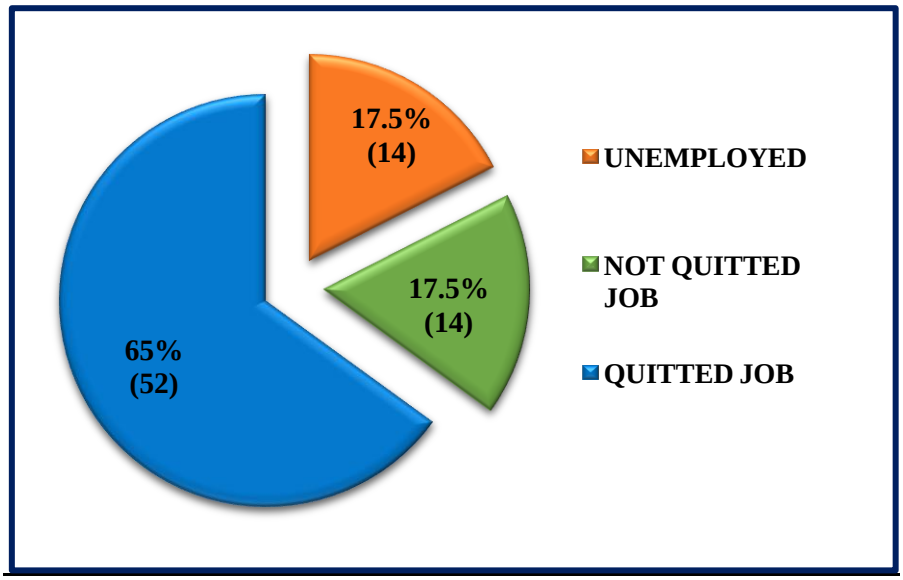

Figure 4: shows occupation status of participants

Result showed significant differences in the adherence status, on comparing between the age categories for GR SMAQ HD total score (p = 0.02;<0.05). Higher adherence is seen with age group < 30 years. On comparing employment status, found significant difference in (P = 0.01;<0.05). Comparatively unemployed patients had better adherence. There is a significant difference (p=0.04;<0.05) noted between score 1 and 2 income status, as per modified kuppuswamy income score. Score 1 income group having better adherence level. Negatively, there was no significant difference (P = 0.36; > 0.05) between males and females. Similarly no significant difference with regard to marital status (p=0.2;>0.05), education status (p=0.5;>0.05) and co-morbid conditions (p=0.72;>0.05). Correlation between demographic characteristics and total score of modified GR-SMAQ-HD were detailed in table-1.

Table 1: Correlation between demographic characteristics and total score of modified GR-SMAQ-HD score

S.No	Title		Frequency (n)	Percentage (%)	TOTAL GR-SMAQ-HD SCORE	
					Mean ± SD	P Value
1.	**Gender**	Male	58	72	5.5 ± 1.2	>0.05 (0.36)
		Female	22	28	5.8 ± 1.7	
2.	**Age**	21-30	2	2	8 ± 0	**<0.05 (0.02)**
		31-40	15	19	5.8 ± 1.4	
		41-50	33	41	5.4 ± 1	
		51-60	30	38	5.5 ± 1.4	
3.	**Marital Status**	Unmarried	4	5	6.2 ± 4.2	>0.05 (0.2)
		Married	76	95	5.5 ± 1.2	
4.	**Occupation**	Unemployed	14	17.5	6.4 ± 1.18	**<0.05 (0.01)**
		Quitted Job	52	65	5.5 ± 1.19	
		Not Quitted Job	14	17.5	5.2 ± 1.60	
6.	**Modified Kuppusamy Income Score**	Score 1 (≤ 10,001)	76	95	5.6 ± 1.3	**<0.05 (0.04)**
		Score 2 (10,002–29,972)	4	5	4.5 ± 0.3	
7.	**Education**	Uneducated	25	31.2	5.6 ± 1.8	>0.05 (0.5)
		Primary	13	16.2	5.2 ± 0.5	
		Secondary	28	35	5.6 ± 1.2	
		Higher Education	7	8.75	6 ± 0.6	
		Graduated	7	8.75	6 ± 3	
8.	**Co-morbid Status**	HTN	77	96.25	5.6 ± 1.3	>0.05 (0.72)
		DM2	15	18.75	5.4 ± 1.1	

		Hypothyroid	2	2.50	6 ± 2	
		Cardiac	1	1.25	4 ± 0	
		Pulmonary TB	1	1.25	5 ± 0	
		No Comorbid	4	5	5.6 ± 1.3	

Table 2: shows the response percentage for each questions of Modified GR-SMAQ-HD questionnaire

Modified Version of Greek Simplified Medication Adherence Questionnaire for Haemodialysis patients	Response (%)	
	Score 1	Score 0
Medication Adherence		
1. When you feel bad, have you ever stopped taking your medications?	**93.75**	6.25
2. Have you ever forgotten to take your medications?	32.5	**67.5**
3. Have you ever forgotten to take your medications between the two dialysis sessions?	25	**75**
4. In the last week, how many times have you not taken your medications?	**97.5**	2.5
Attendance At Hemodialysis Session		
5. Last month, how many times was the session shortened on your own initiative?	**100**	0
6. Last month, on average, how many minutes was the session cut off on your own initiative?	**91.25**	8.75
Fluid/Diet Adherence		
7. During the past week, how many times did you follow fluid restrictions?	31.25	**68.75**
8. During the past week, how many times did you follow dietary recommendations?	**91.25**	8.75

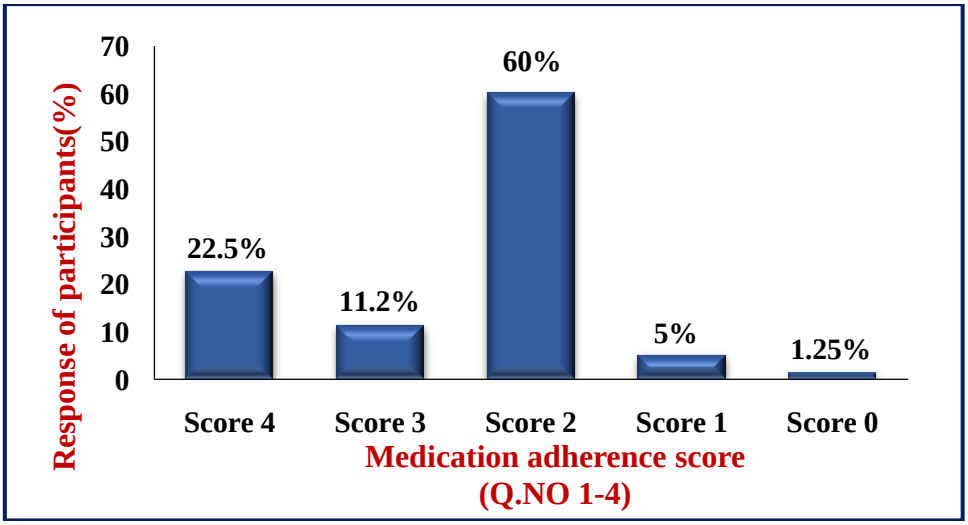

Figure 5: shows response percentage for medication adherence domain (Q.No 1-4)

On the basis of the GR SMAQ HD score, all three domain i.e., medication, haemodialysis and fluid/diet adherence, were analyzed separately (see table 2). Firstly, medication adherence domain (Q.No 1–4) showed 22.5% participants scored 4, 11.2% scored 3, 60% scored 2, 5% scored 1 and 1.25% scored 0 (see figure 5). Haemodialysis adherence domain (Q.No 5 & 6) showed 91.25% scored 2, 8.75% scored 1, no participants scored 0 (see figure 6). Fluid and diet adherence domain (Q.No 7 & 8) showed 28.7% scored 2, 65% scored 1 and 6.2% scored 0 (see figure 7).

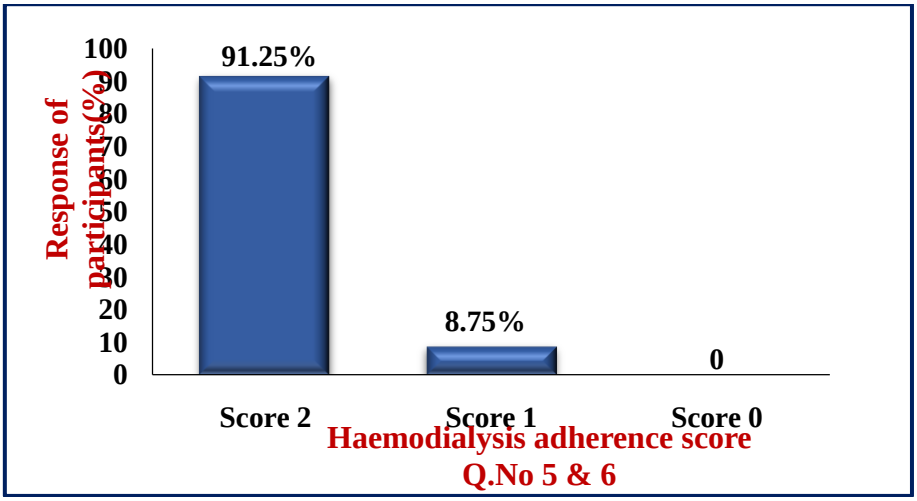

Figure 6: shows response percentage for Haemodialysis adherence domain (Q.No 5 & 6)

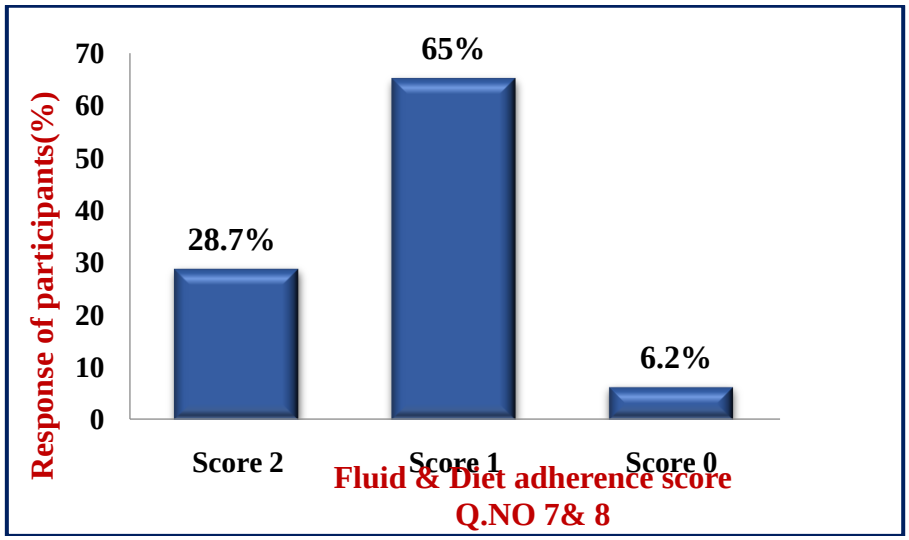

Figure 7: shows response percentage for Fluid and diet adherence domain (Q.No 7 & 8)

On analyzing total score of GR SMAQ HD, 7.5% showed higher adherence score 8, 16.25% scored 7, 21.25% scored 6, 43.75% scored 5, 10% scored 4, 1.25% scored 2, no participants scored 3, 1 & 0 (see figure 8).

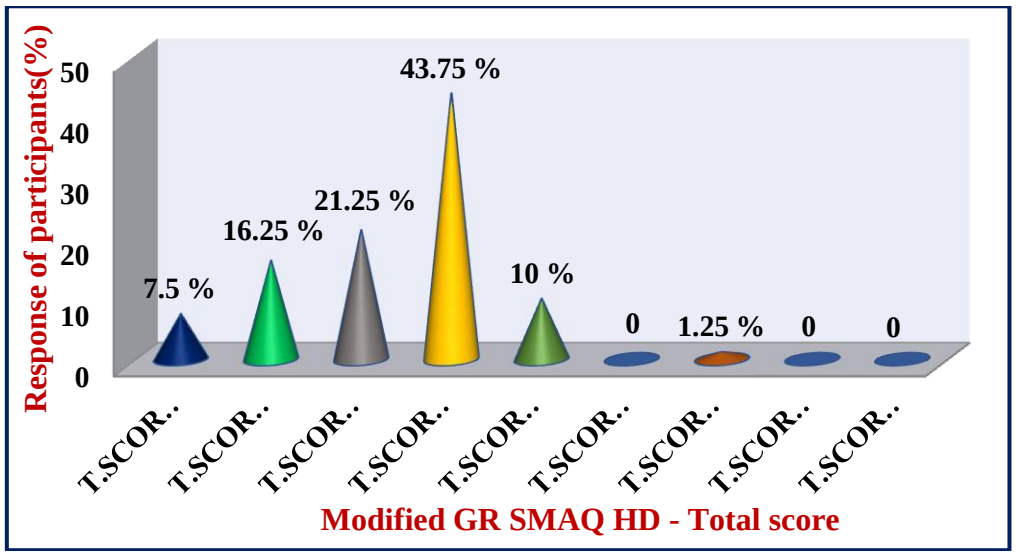

Figure 8: shows analysis of Total Score of Modified Version of GR – SMAQ –HD

DISCUSSION

This study analyzed medication adherence in ESRD patients undergoing HD using a questionnaire survey with a modified GR SMAQ HD. Although with availability of many other methods, subjective method was chosen, as this can be a quick, handy, and trustworthy questionnaire tool (the Modified GR SMAQ HD) to assess the medication adherence of ESRD patients on HD, especially for health care professionals who are undergoing hectic and frenetic agendas ever day [8].

In present study, age group between 21-30 years showed better adherence score ($p<0.05$) than older age group, which was similar to Kutner et al [9] report: where better adherence found in age group 25-34 years, but contrast to Deepak jain et al [10] and Alkatheri AM et al [11] study, where adherence more with elderly age group. Found significant correlation with family income (<0.05), unexpectedly lower family income participants showed better adherence level. Also found that the 65% (n=52) discontinued from their job, due to difficulties arisen by dialysis procedure. Significantly more adherence score ($p<0.05$) was found among unemployed patients than employed. Gender, marital and co-morbid status does not have significant correlation ($p>0.05$). Hypertension was the predominant co morbid condition found in association with ESRD, followed by that only diabetes mellitus. No significant correlation found with education status ($p>0.05$), this is highly contradicting Alkatheri AM et al [11] and Schmid et al [12] reports, where higher the education higher the adherence level.

On assessing domains individually, adherence to Haemodialysis session is higher (91.25%). 100% patients were strictly following HD session and 91.25% were, not reduced the session duration. Desperately, only 22.5% patients were having higher medication adherence. The major reason found for non-adherence to medication was forgetting to take medicine. Similarly, only 28.7% were following diet and fluid restrictions. This is highly conflicting the reports of Ghanim Hamid Al-Khattabi et al [13] study where around 88% were adherent to diet/fluid restrictions, 87.99% to medication and only 55.96% were adherent to dialysis sessions.

On assessing total score of modified version of GR SMAQ HD, 43.75% having score of 5, 11.25% having score of less 5 and no participants scored zero adherence. Totally 7.5% patients only has higher adherence with total score of 8, while 92.5% belongs to moderate to poor adherence. This is almost similar to Alikari V et al [14] study where result conclude as patients are having moderate adherence.

CONCLUSION

The present research explored that only 7.25% patients had greater adherence level to all 3 domains. Out of those domains, patients showed significantly higher adherence (91.25%) to haemodialysis session than for other domains namely, medication and fluid/diet adherence. Thus, to achieve a good adherence status, frequent medication adherence assessment is highly essential, for which modified GR-SMAQ-HD questionnaire provides a quick, handy, trustworthy and patient friendly tool, especially for health care professionals who are undergoing hectic and frenetic agendas ever day and also for the patients who are suffering with chronic debilitating disease like ESRD. Additionally, this can also promote constant involvement of ESRD patients on their own prescribed therapeutic regimens, which will ultimately elevate the success level of any disease treatments.

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CONFLICT OF INTEREST: None

REFERENCES

1. Imamah NF, Lin HR. (2021), Palliative Care in Patients with End-Stage Renal Disease: A Meta Synthesis. Int J Environ Res Public Health. 18(20):10651.
2. Mokwena J, Sodi T, Makgahlela M, Nkoana S. (2021), The Voices of Black South African Men on Renal Dialysis at a Tertiary Hospital: A Phenomenological Inquiry. Am J Mens Health. 15(5):15579883211040918.
3. Carswell C, Reid J, Walsh I, McKeaveney C, et al. (2021), The Experiences of a Complex Arts-Based Intervention for Patients with End-Stage Kidney Disease Whilst Receiving Haemodialysis: A Qualitative Process Evaluation. Healthcare. 9(10):1392.
4. Bello AK, Okpechi IG, Osman MA, Cho Y, et al. (2022), Epidemiology of haemodialysis outcomes. Nat Rev Nephrol. 1–18.
5. Radisic G, Duncanson E, Le Leu R, Collins KL, et al. (2022), Improving management of needle distress during the journey to dialysis through psychological education and training - the INJECT study feasibility pilot protocol. Pilot Feasibility Stud. 8(1):28.

6. Fotaraki ZM, Gerogianni G, Vasilopoulos G, Polikandrioti M, et al. (2022), Depression, Adherence, and Functionality in Patients Undergoing Hemodialysis. Cureus. 14(2).
7. Mechta Nielsen T, Schjerning N, Kaldan G, Hornum M, et al. (2021), Practices and pitfalls in medication adherence in hemodialysis settings – a focus group study of health care professionals BMC Nephrology. 22:315.
8. Alikari V, Matziou V, Tsironi M, Kollia N, et al. (2017), A modified version of the Greek Simplified Medication Adherence Questionnaire for hemodialysis patients. Health Psychol Res. 5(1).
9. Kutner NG, Zhang R, McClellan WM, Cole SA. (2022), Psychosocial predictors of non- compliance in haemodialysis and peritoneal dialysis patients. Nephrol Dial Transplant. 17(1):93–99.
10. Jain D, Aggarwal HK, Meel S. (2018), Assessment of medication adherence in chronic kidney disease patients: a tertiary care experience. Int J Health Sci Res. 8(11):20- 30
11. Alkatheri AM, Alyousif SM, Alshabanah N, Albekairy AM, et al. (2014), Medication adherence among adult patients on hemodialysis. Saudi J Kidney Dis Transplant. 25(4):762.
12. Schmid-Mohler G, Thut MP, Wüthrich RP, Denhaerynck K, et al. (2010), Non-adherence to immunosuppressive medication in renal transplant recipients within the scope of the Integrative Model of Behavioral Prediction: a cross-sectional study. Clin Transplant. 24(2):213-222.
13. Al-Khattabi G. (2014), Prevalence of treatment adherence among attendance at hemodialysis in Makah. Int J Med Sci Public Health. 3(5):592-8
14. Alikari V, Tsironi M, Matziou V, Babatsikou F, et al. (2018), Adherence to Therapeutic Regimen in Adults Patients Undergoing Hemodialysis: The Role of Demographic and Clinical Characteristics. Int Arch Nurs Health Care. 4:096.