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THE ROLE OF SOCIO-DEMOGRAPHICS ON DOCTOR MOTIVATION AND TURNOVER IN TAMIL NADU CHCS: SMART PLS ANALYSIS.

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Abstract

BACKGROUND : Tamil Nādu is the one of the states having more number of doctors than WHO ratio 1: 1000, yet specialists and GDMOs shortage in community health centers is a continuous pattern of rural health statistics from the year 2015 despite many policies.

OBJECTIVES : The study efforts to analyze the ERG (Existential, Relatedness and Growth) needs of doctors in relation with the turnover intention and to investigate the moderating effect of socio-demographic variables on the relationship between ERG dimensions and turnover intention.

METHODS : Structured questionnaire representing Existential, Relatedness and Growth needs was designed based on the review of the literature. Hypotheses have been set for the investigation to test the relationship and investigate the moderating effects of age, gender, years spent in a rural area, marital status, years of service and future location choice.

RESULTS : A negative association was discovered between ERG needs and turnover intention. Absence of 'Growth needs' was shown to be the most crucial predictor of rural CHC doctors' turnover intention. The relationship between ERG motivation and turnover intention is influenced by doctors' marital status, childhood years spent in rural areas, and future location choices.

CONCLUSION : Identifying these aspects will enable policymakers, academics, and public health practitioners to devise rural retention strategies for doctors.

KEYWORDS : Rural CHC doctors, ERG dimensions, Turnover intention, Moderation, demographic variables.

INTRODUCTION

Tamil Nadu is one of the largest states in India, having 97.35 per cent of the rural land with a rural population of 37229590 as of the 2011 census¹. The objective of Health Sector 2023 is for Tamil Nadu to become India's number one state in terms of societal health indicators by delivering universal access to health services². Rural Health Statistics, 2020 shows that there are now 179 GDMO vacancies in rural CHCs³. Moreover, CHCs have a massive shortage of specialists as of 2015. Currently, there is a shortage of 1312 specialists. Despite the need for 1540, just 228 have been filled⁴. Keeping rural doctors is a constant battle, so that NHP 2015 underlined the need for more rural medical students to return to their communities and enhance access to health care for the poor⁵. Also, the government took some compulsory measures for retention like mandatory rural postings and mandatory rotational postings⁶. However, the applicability of the standards is a big challenge. Tamil Nadu is one of six states with more physicians than the WHO's 1: 1000 ratio. It has four physicians per 1000 people, but abundance in urban areas, producing rural shortages. It reflects doctors' disdain towards rural Tamil Nadu. Following the alarming facts, the study sought to find out the motivational demands, reasons for turnover intention and the moderating impacts of socio-demographic characteristics.

MATERIALS AND METHODS

A. OBJECTIVES OF THE STUDY

- To find out the relationship between ERG needs and turnover intention as perceived by rural CHC doctors in Tamil Nadu.
- To investigate the moderating effect of socio-demographic variables on the relationship between ERG dimensions and turnover intention.

This study employs a cross-sectional analytical approach and stratified sampling technique under the probability method. Ethical approval was taken from IRB, IIHMR University.

B. QUESTIONNAIRE DESIGN

Structured questionnaire representing Existential, Relatedness and Growth needs was designed based on the review of the literature. The items relevant to ERG needs taken from 7 validated scales. In addition, three qualitative studies' themes were itemized to form the questionnaire. The



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validated turnover intention scale – TIS-6 by Roodt used in this study to measure the turnover intention of rural doctors⁷. On the basis the objectives, hypotheses have been set for the investigation to test the relationship and investigate the moderating effects of age, gender, years spent in a rural area, marital status, years of service and future location choice.

RESULTS

A. OBJECTIVE NO.1

Find out the relationship between ERG dimensions and turnover intention:

The reliability of questionnaires was verified to determine the Dimensions of ERG and turnover intention, tested by the Cronbach α test through SPSS software. Overall reliability of the questionnaire, i.e., 0.933 for 43 items, is highly reliable⁸. Next the dimensions of ERG were extracted through the Exploratory Factor Analysis technique.

The results of Exploratory Factor Analysis (EFA):

KMO = 0.942 > 0.5 indicated adequate sampling size to access factor structure. The data acquired for the dimensions of ERG were eligible for factor analysis since Barlett's test of sphericity was significant at 0.000 < 0.05⁹. Through EFA, four components were extracted with a variance of 63.909%, and all the items were forced to form a single factor¹⁰. **The new extracted factors were Factor 1 (Existential needs: EN)** comprising of 8 items, **Factor 2 (Societal relatedness needs: RN_S)** entailing of 5 items, **Factor 3 (Family relatedness needs: RN_F)** involving of 5 items and **Factor 4 (Growth needs: GN)** residing of 6 items describing the variances of 19.078, 15.819%, 14.517% and 14.495% respectively. Further to check the validity and causal relationships, the dimensions of ERG need and Turnover intention were further subjected to CFA and Structural Equation Modelling (SEM) analysis¹¹. It comprises of two parts; one is measurement model and next is structural model.

a. Measurement Model:

Before constituting the structural model, the path of the framework to be utilized for constructing the model was checked through the measurement model. The confirmatory factor analysis technique was used to determine the constructs' reliability and validity as derived after exploratory factor analysis.¹² (Fig.2, Table.1) The square root of average variance extracted values and discriminant validity values were verified with the Fornell and Larcker criteria and the Heterotrait and Monotrait ratio (HT-MT ratio)^{13,14}. HTMT ratio indicated the correlation values between the latent constructs to show the extent of the uniqueness of the measure. (Table 2).

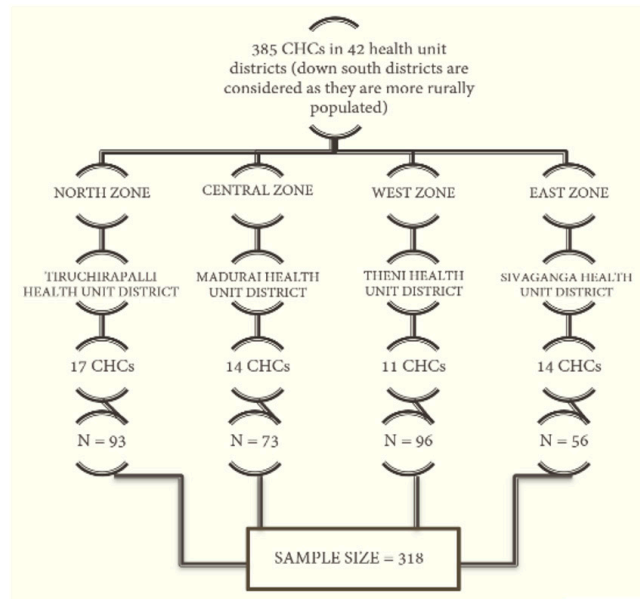


Figure 1: Sampling method and respondents of study

Table 1: Convergent Validity

	Constructs and associated items	Loading	Cronbach's Alpha	Composite reliability	Average variance extracted
Existential needs			0.911	0.93	0.653
EN1	Housing services	0.76			
RN2	Appreciation from patients	0.805			
RN3	Pleasant working climate	0.824			
EN2	Working conditions with light, heat, and ventilation	0.821			
EN3	Safe and attractive working environment	0.849			
EN4	Social benefits	0.802			
EN5	Satisfactory physical surroundings	0.796			
GN3	Initial training for my learning	0.633			
Growth needs			0.86	0.895	0.588
GN2	Sense of value what I do	0.728			
GN4	Personal growth in my work	0.804			
GN5	Opportunities for advancements in my career	0.758			
GN6	Equal opportunities for promotion	0.788			
GN8	Promotion opportunities	0.736			
RN6	Status in the community as health care professional	0.784			
Family relatedness needs			0.833	0.883	0.602
GN9	Opportunity to expand the scope of practice	0.709			
RN11	Spousal fulfillments	0.844			
RN12	Finding spouse job	0.75			
EN12	Undisrupted family life	0.762			
EN13	School for children	0.806			
Societal relatedness needs			0.884	0.915	0.684
RN9	Interpersonal relationship	0.803			
GN11	Chance to paying back for public concern	0.796			
GN12	Chance to work for the poorest segments	0.844			
GN7	Chance to work for other people	0.829			
RN10	Social contact at work	0.86			

b. Structural model:

Hair et al. advocated, SEM to analyze the cause-and-effect relationship between the dependent and independent variables¹⁵. Dimensions of ERG needs as obtained after the Confirmatory Factor Analysis was used further in envisaging the proposed conceptual relationship of ERG dimension with turnover intention. After removing the insignificant dimension, i.e. "Family relatedness needs", the final structural model comes up with three significant dimensions and were

tested with turnover intention and checked for model fit.

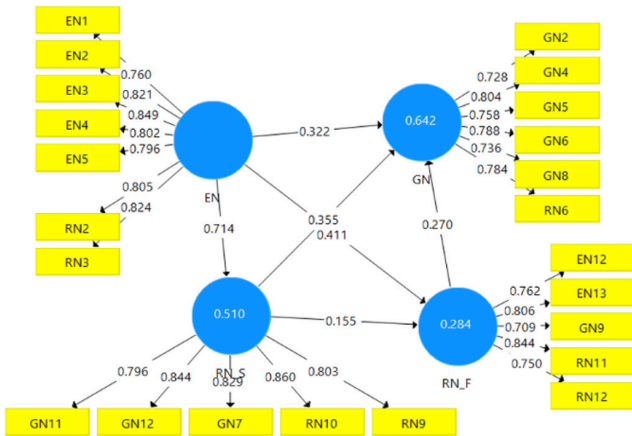


Figure 2: Measurement model

Table 2: Discriminant Validity

	EN	GN	RN_F	RN_S
Fornell-Larcker criterion				
EN	0.808			
GN	0.716	0.767		
RN_F	0.522	0.597	0.776	
RN_S	0.714	0.706	0.448	0.827
Heterotrait – Monotrait ratio				
EN	1.000			
GN	0.803	1.000		
RN_F	0.594	0.7	1.000	
RN_S	0.789	0.807	0.514	1.000

reliable source for examining multi-correlational variables¹⁶. Furthermore, the t-value must be larger than 1.69, and the p-value must be less than .05¹⁷. R² levels of 0.04 to 0.16 are moderately poor in social sciences, according to Cohen and Ritchey, whereas R² values of 0.25 to 0.49 are moderately high^{18,19}. The R² score in this study is 28.6 per cent, indicating that the model generated has a moderately strong effect. Hair recommends the f-values 0.35 (strong effect), 0.15 (moderate effect), and 0.02 (weak effect)¹⁵. GN and RNS considerably influence TOI, whereas EN has a minor impact. (Table.3) Q² values greater than 0, 0.25, and 0.50, respectively, indicate the PLS-path model's small, medium, and significant predictive significance¹⁶. The Q² value is 0.271. (Table.3) Hence the model has medium predictive power. Furthermore, the SRMR was lower than the initially recommended criterion of 0.080, suggesting that the model fit was acceptable²⁰. The normed fit index developed by Bentler is one of the fit metrics suggested in the SEM literature; the closer the NFI to 1, the better the fit²¹. NFI values greater than 0.9 generally indicate an acceptable fit²². In this study, The SRMR, i.e., 0.000 and NFI = 1, indicated the acceptable fit of the model.

Table 3: Model Fit Indices for Final Model

	Beta coefficients	T Statistics	P Values	f ²	Q ²	R ²	NFI	SRMR
GN -> TOI	-0.852	7.875	0.000	0.186	0.271	28.6	1	0.000
RNS -> TOI	0.740	5.979	0.000	0.155				
EN -> TOI	-0.249	2.611	0.009	0.019				

Table 4: Beta Coefficients for the Final Model

			Estimate
Turnover	<---	GN	-.852
Turnover	<---	RN_S	.740
Turnover	<---	EN	-.249

Table 4 shows that with every unit increase in growth needs, societal relatedness needs and existential needs, Turnover intention increased by -.852, .740, and -.249 units and growth need were found to have maximum impact on the turnover intention of rural CHC doctors. (Table.4) On the other hand, growth and existential requirements were found to have an inverse connection with doctors' turnover intention. Hence, it can be deduced that there is a significant relationship between ERG dimensions with elements

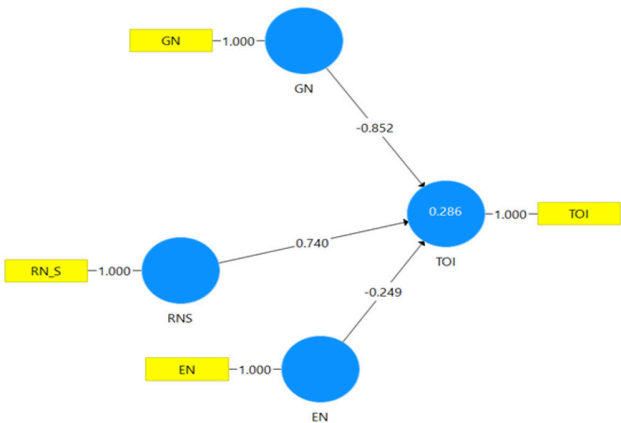


Figure 3: Final structural model

The key standards for the internal structural model evaluation are the determination coefficient R² and the path coefficient (β -value) and the T-statistic value, the impact size f² and the model's predictive significance Q². Path coefficient and total effect were used to test the hypothesis. It is the most

turnover intention. So, the alternative hypothesis H1: There is a significant relationship between Dimensions of ERG (Existential, relatedness and growth) and Turnover intention is accepted.

Table 5: Moderation Effects

Moderation	Beta coefficients	Standard Deviation	T Statistics	P Values	Significance
Age*ERG -> TOI	0.039	0.06	0.653	0.514	Insignificant
Gender*ERG -> TOI	0.092	0.063	1.448	0.148	Insignificant
Marital Status*ERG -> TOI	-0.127	0.059	2.149	0.032	Significant
ERG*years rural -> TOI	0.105	0.05	2.111	0.035	Significant
ERG*Years of service -> TOI	-0.078	0.059	1.257	0.209	Insignificant
ERG*Location choice -> TOI	-0.166	0.049	3.379	0.001	Significant

B. OBJECTIVE NO.2

Moderating Effect of Socio-Demographic Variables on the Dependent Variables

A moderator variable can be visualized as a third variable that changes the relationship between the independent and dependent variables[23]. Thus, a moderator specifies the conditions under which a given effect occurs and the conditions under which the direction (nature) or strength of an effect vary [24]. Once the relationship found between ERG dimensions and turnover intention, the final model was analyzed with moderators i.e., age, gender, marital status, years spent in rural areas, years of service, and future location choice for their tapping effects in relationship of ERG needs and turnover intention.

The results of moderation show that the p value for age, gender and years of service are 0.514, 0.148 and 0.209; since the values are more than 0.05, hence there is no significant moderating impact of variables age, gender, and years of service of rural doctors in influencing the dimensions of ERG concerning turnover Intention. However, for the other demographic variables i.e., Marital status, Years spent in the rural area, and future location choice, the p values are 0.032, 0.035 and 0.001. Since the value is less than 0.05, these variables have a significant moderating effect. Further to identify which group is having a significant effect, simple slope analysis results have been checked with Smart PLS.

The focal predictors represent the negative relationship between ERG Dimensions and turnover intention for higher for married doctors and lower for unmarried doctors. The gradient slope values assess the same. Likewise, a negative relationship is strengthened for doctors who spent fewer years in rural areas and lowered for the doctors who spent more years. In addition, the negative relationship intensified for doctors having the rural choice of location in future and

decreased for the doctors having the urban choice of location.

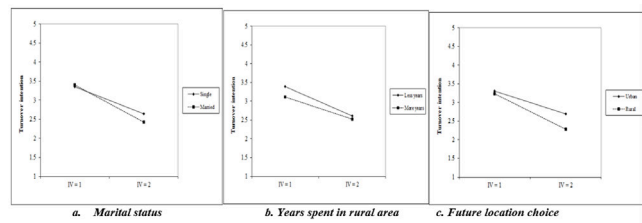


Figure 4: Graphical comparison of moderating variables – Slope analysis

Table 6: Slope Analysis Results for Significant Moderators

Marital status	Years spent in rural area	Future location choice
Gradient of slope for Single doctors	Gradient of slope for Less years spent in rural area	Gradient of slope for Urban choice in future
-0.359	-0.396	-0.305
t-value	t-value	t-value
-8.027	-8.855	-6.820
p-value	p-value	p-value
0.000	0.000	0.000
Gradient of slope for Married doctors	Gradient of slope for More years	Gradient of slope for Rural choice in future
-0.486	-0.291	-0.471
t-value	t-value	t-value
-4.437	-2.656	-4.300
p-value	p-value	p-value
0.000	0.009	0.000

C. TESTING OF STUDY HYPOTHESES

Inferences were found from the results, and the study proved the following hypotheses :

1. There is a relationship between Dimensions of ERG and Turnover intention.
2. The interactive relationship between ERG dimensions and turnover intention is not affected by age.
3. The interactive relationship between ERG dimensions and turnover intention not affected by gender.
4. The interactive relationship between ERG dimensions and turnover intention affected by marital status.
5. The interactive relationship between ERG dimensions and turnover intention affected by years spent in rural area.
6. The interactive relationship between ERG dimensions and turnover intention not affected by 'years of service'.
7. The interactive relationship between ERG dimensions and turnover intention affected by 'future location choice'.

DISCUSSION

The study indicated a negative association between ERG motivation and doctor turnover intention, with 'Growth needs' having the most significant influence. Age, gender, and years of service did not alter the aspects of ERG demands in influencing rural CHC doctors' turnover intentions. However, marital status, years spent in a rural area,

and future location choices alter interaction connections. Based on the study's findings, the Tamil Nadu public health department must expand human resources, especially physicians, to assist the poor, thereby strengthening the health system's infrastructure and workforce quality. This study has various implications for health care providers and policymakers in Tamil Nadu.

To meet the growth needs of doctors, accurate and rapid scholarship awarding systems without time-bound forced rural deployments are required. NHM should design more detailed training modules and refocus medical education on rural health to increase training quality. Achieving procedural justice in setting promotion requirements would improve doctor motivation. From the start of their course, rural students must be encouraged, not only admired but mentally prepared to serve their community. This rural pipeline approach should be reinforced based on the study's conclusions. Doctors' marital status is an essential element in rural retention. Due to their jobs or lack of recreation amenities, most married doctors and wives do not want to move to rural locations.

On the other hand, they do not wish to stay in rural areas if they work elsewhere, especially in cities. Getting the exact location for doctor couples is difficult because the counselling process determines priorities. So, for married doctors, the government should consider creating rural posts with adequate counselling and without delays. The study found that basic rural amenities influenced their future placement choices; however, many existential demands are regarded adversely by rural doctors and specialists, such as COVID safety, social instability, isolation, communication, transportation, and water facilities. Upgrading basic facilities in rural regions is a cooperative endeavour of public health, public welfare, and rural administrative agencies.

CONCLUSION

From the perspective of the practical contribution of this study, it is anticipated that the conclusions will provide management implications to boost the motivation of Rural CHC doctors. Moreover, this study can be applied to the rural public health care setting in significant states of India where the problem is rural doctors' retention. Nevertheless, the sampling frame identified should be the same as this study to obtain reliable results.

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