Impact of Self-Help Groups on Consumption Expenditure: An Empirical Study of Rural Households in North Coastal Andhra Pradesh

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Abstract
The Self-help Groups have played a pivotal role in eradicating poverty and bringing people above the poverty line by increasing income level and consumption capacity. Increased levels of income of SHG households are expected to raise their expenditure on various items. The existing literature review confirmed that most SHGs experienced improvement in income and savings, leading to an increase in expenditure on food and non-food items. Hereafter, the present study aimed to evaluate the impact of Self Help Groups on household consumption expenditure in North Coastal Andhra Pradesh, India. The study's main objective is to examine the impact of SHGs on the consumption expenditure of the participant households. The study analyzed 600 households' data collected from rural areas in the North Coastal districts of Andhra Pradesh. The members of OSHGs are treated as a treatment group and members of NSHGs as a control group. The impact of SHGs on consumption is examined by comparing two groups. The study results found that the higher level of recurring expenditure has been observed in NSHGs than in OSHG in all sample areas. Contrary, a higher level of non-recurring expenditure has been observed in OSHG when compared to NSHGs in all cases of sample area. The study has found that the consumption pattern of OSHG households has improved. Participation with SHG programs helps shift their consumption behavior from lower indicators (food) to standard indicators (non-food). Effective implementation of the schemes through SHGs for their economic improvement is needed for improving their consumption standard.
Keywords: Consumption, Self-Help Groups and Regression Analysis

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I.   INTRODUCTION

The most important determinants of the economic status of a society are its per capita income, the standard of living, the level of consumption etc. The standard of living of a household can be understood from the consumption pattern, and the quality of the consumption budget indicates the level of welfare of the household (Sethi & Pradhan, 2012). The household consumption pattern is an important barometer of individual welfare and wellbeing in any country (Patrick, 2015). The expenditure incurred by a household on domestic consumption during the reference period is the consumer expenditure. Household consumer expenditure is the total of the monetary values of various groups of items (NSS, 2004). Consumption categories are formed mainly based on the commodities involved. There are two categories: Food and non-food consumption (Pradhan, 2012). Consumption to satisfy hunger and thirst needs is food consumption. The consumption that is not related to food but meant for the satisfaction of health, education, travel and recreational needs is regarded as non-food consumption (Sooryamoorthy, 1991).

During the twentieth century, global consumption has been increasing. Changes in consumption over a period reveal more about welfare status. In India, reforms resulted in a rise in wellbeing, as well as savings and consumption. Non-food consumption became common in the consumption basket due to the abundance of modern consumable goods and services on the market (Patrick, 2015). In particular, the Self-help Groups (SHGs) one of the best channels of saving promotion and consumption of households over the last three decades. According to Deininger and Liu (2009) significant gains in consumption for participants through Self-help Groups. The family expenditure has increased due to positive changes in the SHGs member's income. The incremental incomes enhance the savings and promote expenditure or consumption of the family after joining the SHGs (Patel, 2014). Dagnew and Kaur (2016) observed an improvement in the pattern of expenditure of participant households to fulfill the household's demand. Food consumption patterns showed a significant

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change after being involved in the Self-help Groups (Karunakaran, 2018). The Self-help Groups have played a pivotal role in eradicating poverty and bringing people above the poverty line by increasing income level and consumption capacity (Khan, 2014). Therefore, the income, consumption and saving patterns of SHG households have become interesting topics for academicians, policy researchers, and government. Increased levels of income of SHG households are expected to raise their expenditure on various items. Several authors report the patterns of SHG household expenditure on food and non-food items. According to Moyle et al. (2006), Dhanya and Sivakumar (2010), Kashyap and Kashyap (2010), Kumar (2010), (Ghosh 2012) and Swamy and Tulasimala (2013), the majority of the SHGs experienced an improvement in income and savings lead to increase in expenditure on food, education and health. Since many of the studies have shown the positive impacts of SHG's on consumption expenditures of households, the present study aimed to evaluate the impact of Self Help Groups on the household consumption expenditure in North Coastal Andhra Pradesh, India.

Empirical Review

Gaonkar (2004) aimed to evaluate the role of SHGs in the empowerment of women. The study concluded that the SHGs had a lasting impact on income, savings, and consumption expenditures. Deininger & Liu (2009) examined enhancement of economic potential through the self-help group model. Their analysis finds that longer program exposure positively impacts consumption, nutritional intake, and asset accumulation. Kumar (2009) provided evidence for the impacts of Self-help Group Activities on member households. The results support that women's participation in SHGs generates substantial income and has significance in household consumption. Mula & Sarker (2013) studied the economic impact of SHGs on participant households. The study found that after the number of income-generating activities were undertaken by the SHGS, the positive change in income (65.39%), employment (78.94%), savings (120.02%), and consumption (5.12%) the members after joining the SHG. Nalini et al. (2014) attempted to understand the impact of self-help groups on the rural economy. Out of 18 women SHGs, it was evident that more impact on women members concerning consumption pattern, income and employment generation. Jaida (2016) made a consumption-based analysis of 150 Self-help group households from Haryana.

The results found that the impact of SHGs is reflected in consumption differentials and the SHGs seem to have contributed to improvement in consumption pattern. Priyakumari & Karthik (2017) focused on the role of SHG in the economic empowerment of rural women. The study's finding shows that the SHG activities have a positive impact on the economic aspect like income and expenditure of the members. Das, S. K., & Chatterjee, T. (2018) examined the impact of microfinance on the consumption of scheduled tribes in the backward district of Bankura, in West Bengal, India. The authors studied 50 SHG tribal women households and concluded that there is a visible positive impact of SHGs for uplifting their consumption. Maruthesha et al. (2019) have focused on the functioning of 10 SHG's to study the impact of SHGs on the food consumption pattern of rural farm women. The women members of SHG's were found to save a portion of their income and spending more on consumption. Batra et al. (2020) studied the impact of SHGs on education, food and health expenditure by households. The study found that the expenditure pattern shows that most households have contributed to the expenditure from the income earned after becoming a group member.

Objective and Hypothesis

The broad objective of the study is to analyze the impact of SHGs on the consumption expenditure of the participant households. In specific terms, to examine the socio-economic profile of sampled households and to identify determinates of consumption expenditure of SHG households. Besides the objectives mentioned above, the study examines the following important hypotheses. Household consumption expenditure does not differ significantly between OSHGs and NSHGs. Whether OSHG member households enjoy higher consumption status as compared to their counterparts. The variation in household consumption expenditure is not affected by socio-economic factors.

II. METHODOLOGY

The present study aims to examine the impacts of SHGs on the consumption expenditure of participant households in North Coastal Andhra Pradesh, India. Among the 13 Districts of Andhra Pradesh, all the three North Coastal Andhra Pradesh districts are selected for the study. The multi-stage stratified random sampling method is used in the present study for selecting sample units. The selection process is carried out in four stages, i.e., relating to districts, mandals, villages and households. A total of 12 villages are selected from the selected mandals. At the final stage, around 50 households are selected from each sample village based on the random sampling procedure. As a whole, 600 households are selected from the 12 villages of the 3 selected mandals from Andhra Pradesh's districts. In all, 600 SHG households are selected for the study, while 300 members from Old Self Help Groups (OSHG) and 300 members from New Self Help Groups (NSHG). For selecting OSHG, the SHGs who have completed more than eight years membership and selecting NSHG, the SHGs

having a membership of less than five years is considered. Primary data is collected from the SHGs members of households by using a well-structured questionnaire. The members of OSHGs are treated as a treatment group and members of NSHGs as a control group. The impact of SHGs on consumption is examined by comparing two groups. In analyzing the data, different statistical techniques and tests are used. The multiple linear regression is employed to identify determinants of household consumption expenditure.

III. RESULTS AND DISCUSSIONS

The household's expenditure is divided into two categories viz., recurring expenditure and non-recurring expenditure. The amount spent on food and non-food items such as clothing, housing, fuel, education, etc., is considered recurring expenditure, and the amount spent on events viz., birth, sickness, marriage, death etc., are considered as a non-recurring expenditure. Data for recurring expenditure was collected daily, weekly, monthly, and annually for different items and data for non-recurring expenditure was collated on the amount spent during the past three years of the reference period. By making an average for the three years, the annual non-recurring expenditure arrived.

Recurring Expenditure (Food Expenditure)

The expenditure spent on various food items of OSHG and NSHG households is presented in Table – 1. In North Coastal Andhra Pradesh, the share of food expenditure by OSHG households has spent a maximum of 23.40 percent on other food items, and it is followed by 18.57 percent on rice, 13.74 percent on vegetables, 11.60 percent on meat/ fish/egg, 10.53 percent of on coffee/ tea, 8.96 percent on milk/ crud and minimum share of 3.17 percent on sugar. Similarly, the principal share of food expenditure is on other food items by NSHG households is 18.13 percent, and the share spend on rice constitutes 18.08 percent, followed by 15.65 percent on vegetables, meat/ fish/egg is 14.24 percent, milk/ crud is 10.55 percent and least share of 2.93 percent on sugar. An identical pattern of food expenditure shares has been observed across the OSHG and NSHG households. The study found that the major share of food expenditure was paid for rice, vegetables, and meat/ fish/egg. Besides the three main items, the amount expended on other food items also observed a significant share. The average food expenditure of NSHG households was found less than the OSHG households. An average food expenditure per annum of all OSHG sampled households was spent more on rice, vegetables, meat/ fish/egg and coffee/ tea. NSHG households have recorded the prime share of the amount spent on other food items. An identical share of food expenditure on different items has been observed across the OSHG and NSHG households. There was a significant variation in food expenditure between OSHG and NSHG households.

Recurring Expenditure (Non-Food Expenditure)

The expenditure spent on various non-food items of OSHG and NSHG households is presented in Table –2. In the study area, the prime share of 24.24 percent is spent by OSHG households on others, others, clothing, education, and fuel, with a relative share of 18.34 percent, 8.92 percent, 8.69 percent, and 8.61 percent, respectively. For NSHG households, the major share of non-food expenditure 25.23 percent spent on others while 24.48 percent on the interest rate, 7.84 percent on clothing, 7.66 percent on tobacco and 7.37 percent on education. It can be observed that the major share of non-food expenditure was spent on and interest rate in the study area. In the study area, the prime share of non-food expenditure was spent on others items, interest rate and clothing. Besides the three main items, a significant share of the amount spent on liquor and tobacco by sample households. Households belonging to the OSHG have spent the foremost part on interest rate followed by others, clothing, education, fuel and medical care, whereas NSHG households were spent the maximum spent on others, followed by interest rate, clothing, tobacco, education and minimum for medical care. However, there were significant differences regarding non-food expenditure between OSHG and NSHG households in the sample area.

Table – 1: Distribution of Food Expenditure of OSHG and NSHG				
		(percentage to total food expenditure)		
District	**Food Items**	**OSHG**	**NSHG**	**ALL**
VSKP	Rice	18.34	20.78	19.39
	Oil	5.08	5.91	5.44
	Dal	3.20	4.04	3.56
	Sugar	2.09	2.30	2.18
	Vegetables	12.51	16.99	14.44
	Coffee/ Tea	10.68	9.59	10.21
	Milk/ Crud	7.90	12.15	9.73
	Meat/ Fish/Egg	8.98	17.17	12.50
	Others	31.23	11.06	22.55
	Total Food Expenditure	100.00	100.00	100.00

VZM	Rice	17.49	10.78	14.10
	Oil	7.04	6.96	7.00
	Dal	4.03	3.40	3.71
	Sugar	4.17	3.40	3.78
	Vegetables	13.89	14.40	14.15
	Coffee/ Tea	11.31	11.25	11.28
	Milk/ Crud	9.98	9.96	9.97
	Meat/ Fish/Egg	11.70	10.31	11.00
	Others	20.39	29.54	25.02
	Total Food Expenditure	100.00	100.00	100.00
SKLM	Rice	21.00	25.75	23.51
	Oil	6.80	6.51	6.65
	Dal	5.34	5.21	5.27
	Sugar	3.82	3.11	3.45
	Vegetables	16.22	15.65	15.92
	Coffee/ Tea	8.82	8.09	8.44
	Milk/ Crud	9.52	9.09	9.29
	Meat/ Fish/Egg	17.28	16.17	16.69
	Others	11.21	10.42	10.79
	Total Food Expenditure	100.00	100.00	100.00
Total	Rice	18.57	18.08	18.33
	Oil	6.11	6.47	6.28
	Dal	3.92	4.07	3.99
	Sugar	3.17	2.93	3.05
	Vegetables	13.74	15.65	14.66
	Coffee/ Tea	10.53	9.88	10.22
	Milk/ Crud	8.96	10.55	9.72
	Meat/ Fish/Egg	11.60	14.24	12.87
	Others	23.40	18.13	20.87
	Total Food Expenditure	100.00	100.00	100.00

Source: Computed from primary data.

Table – 2: Distribution of Non-Food Expenditure of OSHG and NSHG				
		(percentage to total non-food expenditure)		
District	Non-Food Items	OSHG	NSHG	ALL
VSKP	Fuel	10.80	6.46	7.87
	Electricity	7.93	4.63	5.70
	Clothing	8.89	8.24	8.45
	Medical care	7.89	4.80	5.80
	Education	7.74	9.21	8.73
	Entertainment	6.57	3.32	4.37
	Tobacco	2.31	6.68	5.26
	Liquor	5.23	7.52	6.78
	interest rate	32.08	22.65	25.71
	Others	10.56	26.49	21.31
	Total Non-Food Expenditure	100.00	100.00	100.00
VZM	Fuel	9.42	8.32	8.88
	Electricity	6.60	6.14	6.38
	Clothing	6.96	8.33	7.63
	Medical care	4.01	4.90	4.44
	Education	6.61	7.60	7.09
	Entertainment	6.64	5.41	6.04
	Tobacco	4.42	6.52	5.44
	Liquor	5.09	5.11	5.10
	interest rate	30.40	28.64	29.54
	Others	19.86	19.03	19.46
	Total Non-Food Expenditure	100.00	100.00	100.00

SKLM	Fuel	6.77	7.15	6.95
	Electricity	4.81	6.47	5.61
	Clothing	10.51	6.93	8.79
	Medical care	10.28	2.65	6.62
	Education	10.90	4.94	8.04
	Entertainment	3.81	4.16	3.98
	Tobacco	7.45	9.81	8.58
	Liquor	9.13	5.77	7.51
	interest rate	14.97	23.27	18.96
	Others	21.35	28.84	24.95
	Total Non-Food Expenditure	100.00	100.00	100.00
Total	Fuel	8.61	7.19	7.84
	Electricity	6.15	5.64	5.87
	Clothing	8.92	7.84	8.33
	Medical care	7.57	4.12	5.69
	Education	8.69	7.37	7.97
	Entertainment	5.42	4.16	4.74
	Tobacco	5.22	7.66	6.55
	Liquor	6.84	6.29	6.54
	interest rate	24.24	24.48	24.37
	Others	18.34	25.23	22.10
	Total Non-Food Expenditure	100.00	100.00	100.00
Source: Computed from primary data.				

Non-Recurring Expenditure

The expenditure spent on various non-recurring items by the OSHG and NSHG households is presented in Table –3. In the study area, it has been observed from the Table that the foremost share of non-recurring expenditure is spent on marriages by OSHG households. The amount spent on marriages constitutes a major share that is 33.89 percent, followed by house repairs is 33.45 percent, sickness is 12.92 percent, birthday functions is 8.27 percent, and maturity functions are 6.91 percent. Households that belong to the NSHG category are spent the highest share of 38.56 percent on house repairs. This is followed by 25.58 percent, 18.49 percent, 11.57 percent, 2.39 percent, and the lowest share of 0.1 percent on marriages, sickness, maturity functions, and litigations. The relative shares of non-recurring expenditure are not the same, but spending priorities are also not the same between OSHG and NSHG households. The Table shows that the highest share of non-recurring expenditure is spending for marriage and house repairs. Besides the two main items, the relative share of non-recurring expenditure on sickness, maturity functions is more. Further, it can be observed that there are differences in priorities of spending between OSHG and NSHG households.

Table – 3: Distribution of Non-Recurring Expenditure of OSHG and NSHG				
(percentage to total Non-Recurring expenditure)				
District	**Food Items**	**OSHG**	**NSHG**	**ALL**
VSKP	Birth	7.96	1.20	4.53
	Sickness	18.82	16.82	17.81
	Maturity	13.35	10.32	11.81
	Marriage	37.67	47.23	42.53
	Death	1.75	0.31	1.02
	Litigation	0.00	0.00	0.00
	House repair	19.18	20.75	19.98
	Others	1.27	3.36	2.33
	Total Non-Recurring Expenditure	100.00	100.00	100.00
VZM	Birth	22.89	2.42	13.24
	Sickness	14.20	20.80	17.32
	Maturity	4.73	8.22	6.37
	Marriage	26.24	14.27	20.60
	Death	9.65	4.54	7.24
	Litigation	0.00	0.43	0.20
	House repair	22.29	49.31	35.03

	Others	0.00	0.00	0.00
	Total Non-Recurring Expenditure	100.00	100.00	100.00
SKLM	Birth	1.32	1.24	1.28
	Sickness	8.81	18.51	13.21
	Maturity	4.16	14.24	8.74
	Marriage	35.37	15.60	26.39
	Death	3.01	1.47	2.31
	Litigation	0.00	0.00	0.00
	House repair	47.34	46.00	46.73
	Others	0.00	2.94	1.33
	Total Non-Recurring Expenditure	100.00	100.00	100.00
Total	Birth	8.27	1.50	5.06
	Sickness	12.92	18.49	15.57
	Maturity	6.91	11.57	9.12
	Marriage	33.89	25.58	29.94
	Death	4.21	1.80	3.07
	Litigation	0.00	0.10	0.05
	House repair	33.45	38.56	35.87
	Others	0.36	2.39	1.33
	Total Non-Recurring Expenditure	100.00	100.00	100.00
Source: Computed from primary data.				

Relative Shares of Food and Non-Food Expenditures

The annual amount of consumption (food + non-food) expenditure is presented in Table - 4. For 600 sample households' consumption expenditure is Rs. 35856390, the total expense is spent on consumption. In the case of OSHG households, consumption expenditure is Rs. 17210096. Out of the total, about 42.45 percent spent on food items and 57.55 percent on non-food items. In the case of NSHG households, consumption expenditure is Rs. 18646294. Out of the total, about 36.11 percent spent on food items and 63.89 percent on non-food items. The food expenditure of OSHG households is greater than NSHG households, while the non-food expenditure of NSHG households is greater than OSHG households. From the analysis, it can be concluded that food expenditure is more than non-food expenditure among OSHG households.

Table – 4: Distribution of Food and Non-Food Expenditure OSHG and NSHG								
District	Group	N	Amount in Rs.			In percentage		
			Food	Non-food	Total consumption	Food	Non-food	Total consumption
VSKP	OSHG	100	3270513.00	2291870.00	5562383.00	58.80	41.20	100.00
	NSHG	100	2466432.00	4800926.00	7267358.00	33.94	66.06	100.00
	ALL	200	5736945.00	7092796.00	12829741.00	44.72	55.28	100.00
VZM	OSHG	100	2572748.00	3410890.00	5983638.00	43.00	57.00	100.00
	NSHG	100	2633298.00	3223775.00	5857073.00	44.96	55.04	100.00
	ALL	200	5206046.00	6634665.00	11840711.00	43.97	56.03	100.00
SKLM	OSHG	100	1461600.00	4202475.00	5664075.00	25.80	74.20	100.00
	NSHG	100	1634350.00	3887513.00	5521863.00	29.60	70.40	100.00
	ALL	200	3095950.00	8089988.00	11185938.00	27.68	72.32	100.00
Total	OSHG	300	7304861.00	9905235.00	17210096.00	42.45	57.55	100.00
	NSHG	300	6734080.00	11912214.00	18646294.00	36.11	63.89	100.00
	ALL	600	14038941.00	21817449.00	35856390.00	39.15	60.85	100.00
Source: Computed from primary data.								

Average Propensity to Consumption

The average propensity to consume is the relationship between total consumption and total income in a given time. In other words, the average propensity to consume (APC) is the ratio of consumption to income. Thus The Table – 5 explains the average propensity to consume OSHG and NSHG households. The 600 sample household's average propensity to consume is 76 percent, while OSHG households' average propensity to consume is 70 percent, and NSHG households are 82 percent. Thus, it implies that OSHG households maintain a minimum level of consumption and less than NSHG households.

Table – 5: Average Propensity to Consume in respect OSHG and NSHG					
District	Group	N	Average Consumption	Average Income	Average Propensity to Consume
VSKP	OSHG	100	107776.90	55623.83	0.52
	NSHG	100	100559.50	72673.58	0.72
	ALL	200	104168.20	64148.71	0.62
VZM	OSHG	100	90470.00	59836.38	0.66
	NSHG	100	87299.00	58570.73	0.67
	ALL	200	88884.50	59203.56	0.67
SKLM	OSHG	100	46519.50	56640.75	1.22
	NSHG	100	38682.50	55218.63	1.43
	ALL	200	42601.00	55929.69	1.31
Total	OSHG	300	81588.80	57366.99	0.70
	NSHG	300	75513.67	62154.31	0.82
	ALL	600	78551.23	59760.65	0.76
Source: Computed from primary data.					

The distribution of total households' expenditure per annum (recurring + non-recurring) is presented in Table – 6. In the sample study area, the annual household expenditure of OSHG households is Rs. 28261896.00. Out of the total expenditure, recurring expenditure is 60.90 percent, followed by non-recurring expenditure is 39.10 percent. NSHG household's total expenditure is Rs. 28627794.00. Out of the total expenditure, the highest share of 65.13 percent is recurring, and the share of 34.87 percent is non-recurring expenditure. A higher level of recurring expenditure has been observed in NSHG compared to OSHG in all sample areas from the Table. Contrary, a higher level of non-recurring expenditure has been observed in OSHG when compared to NSHG in all cases of the sample area. As a whole, the recurring expenditure to be found more when compared to non-recurring expenditure.

Table – 6: Distribution of Total Expenditure of OSHG and NSHG Households								
			In Rs.			*In percentage*		
ITDA	Groups	N	Total Recurring Expenditure (Food + Non-food)	Total Non-Recurring Expenditure	Total Expenditure (Recurring + Non-Recurring)	Total Recurring Expenditure (Food + Non-food)	Total Non-Recurring Expenditure	Total Expenditure (Recurring + Non-Recurring)
VSKP	OSHG	100	5562383	3145800	8708183	63.88	36.12	100.00
	NSHG	100	7267358	3245500	10512858	69.13	30.87	100.00
	ALL	200	12829741	6391300	19221041	66.75	33.25	100.00
VZM	OSHG	100	5983638	2591000	8574638	69.78	30.22	100.00
	NSHG	100	5857073	2312000	8169073	71.70	28.30	100.00
	ALL	200	11840711	4903000	16743711	70.72	29.28	100.00
SKLM	OSHG	100	5664075	5315000	10979075	51.59	48.41	100.00
	NSHG	100	5521863	4424000	9945863	55.52	44.48	100.00
	ALL	200	11185938	9739000	20924938	53.46	46.54	100.00
Total	OSHG	300	17210096	11051800	28261896	60.90	39.10	100.00
	NSHG	300	18646294	9981500	28627794	65.13	34.87	100.00
	ALL	600	35856390	21033300	56889690	63.03	36.97	100.00
Source: Computed from Primary Data.								

Whether expenditure differences between OSHG and NSHG households statistically significant or not, f- test and z-test are applied, the results about these tests are presented in Tables – 7, 7(a) & 7(b) provide.

Table –7: Hypothesis Testing- Recurring Expenditure Differences between OSHGs and NSHGs				
Districts	VSKP	VZM	SKLM	Total
Panel A: ANOVA Test				
H_0 : *Mean consumption expenditure between OSHGs and NSHGs is not different*				
F-statistics	31.707*	0.364	0.246	8.792*
p-value	0.000	0.547	0.620	0.003

Inference	**Rejected H$_0$**	**Accepted H$_0$**	**Accepted H$_0$**	**Rejected H$_0$**
Panel B: Z Test				
H$_0$: *Mean difference of consumption expenditure between OSHGs and NSHGs is not different*				
Z-statistics	5.631*	0.603	0.496	2.965*
p-value	0.000	0.546	0.619	0.003
Inference	**Rejected H$_0$**	**Accepted H$_0$**	**Accepted H$_0$**	**Rejected H$_0$**
Source: Computed from primary data.				
Note: *test values are significant when p-value <0.10.				

Table – 7 (a): Hypothesis Testing- Non-Recurring Expenditure Differences between OSHGs and NSHGs				
Measures	VSKP	VZM	SKLM	Total
Panel A: ANOVA Test				
H$_0$: *Mean non-recurring expenditure between OSHG and NSHG households is not different*				
F-statistics	0.051	0.670	0.439	0.528
p-value	0.821	0.414	0.508	0.468
Inference	**Accepted H$_0$**	**Accepted H$_0$**	**Accepted H$_0$**	**Accepted H$_0$**
Panel B: Z Test				
H$_0$: *Mean difference of non-recurring expenditure between OSHG and NSHG households is not different*				
Z-statistics	0.226	0.818	0.663	0.727
p-value	0.821	0.413	0.507	0.467
Inference	**Accepted H$_0$**	**Accepted H$_0$**	**Accepted H$_0$**	**Accepted H$_0$**
Source: Computed from primary data.				

Table – 7(b): Hypothesis Testing- Total Expenditure Differences between OSHGs and NSHGs				
Districts	**VSKP**	**VZM**	**SKLM**	**Total**
Panel A: ANOVA Test				
H$_0$: *Mean total expenditure between OSHGs and NSHGs is not different*				
F-statistics	13.094*	1.023	0.559	0.056
p-value	0.000	0.313	0.445	0.812
Inference	**Rejected H$_0$**	**Accepted H$_0$**	**Accepted H$_0$**	**Accepted H$_0$**
Panel B: Z Test				
H$_0$: *Mean difference of total expenditure between OSHGs and NSHGs is not different*				
Z-statistics	3.619*	1.011	0.748	0.137
p-value	0.000	0.311	0.454	0.890
Inference	**Rejected H$_0$**	**Accepted H$_0$**	**Accepted H$_0$**	**Accepted H$_0$**
Source: Computed from primary data.				
Note: *test values are significant when p-values <0.10.				

The results of the f-test and z-test revealed that the recurring expenditure and its distribution differ significantly between OSHG and NSHG households in the study area. On the other hand, the f-rest and z-test inferred no significant mean differences between OSHG and NSHG households regarding non-recurring expenditure in the sample area. Hence, the study concludes that the distribution of non-recurring expenditure between OSHG and NSHG households is the same. Regarding total expenditure, the null hypothesis is accepted and disclosed that the mean expenditure is the same between OSHG and NSHG households.

Determinants of Consumption Expenditure:

Household consumption expenditure is influenced by several variables like income, household size, age of head of household, education of the head of household etc. Annual income is usually chosen as the indicator of a household's ability to meet its needs. The exercises of consumption expenditure patterns and their relating factors are of immense value for effective socio-economic development. From the social policies point of view, such studies also throw considerable light on the living conditions of the people showing what proportions of families live in various states of poverty or affluence and how these proportions change through time (Nernade et al, 2002). Consumption is a function of disposable income and declines as income increases for both individuals and the economy (Keynes, 1936).

Aggregate consumption expenditure is a component of income, and it varies with income. Size of the household affects consumption patterns and demonstrated that household size has a disproportionate effect on consumption expenditure (Iyengar et al., 1967). The age of the head of the household determines household consumption expenditure. The age of the head of the household has a significant influence on expenditure

especially durable goods (Gupta, 1973). The head of the household's educational level is thus considered an important variable that can affect Patten of household expenditure (Sekhampu & Niyimbanira, 2013). With the above context, the study examines factors that might affect household consumption expenditure. The multiple linear regression analysis is carried out to determine the factors that significantly affect household consumption expenditure. This study calculated per capita consumption expenditure and consider it as the dependent variable. The selected independent variables are age, household size, dependency ratio, sex ratio, education, crop income, wage income, other income, food expenditure and non-food expenditure. Considering these ten factors as independent variables in the multiple linear regression models is presented for determinants of household consumption expenditure following equation based on existing empirical literature:

Sl. No	Author	Year	Dependent Variable	Independent Variables
1	Yimer	2011	Food Expenditure	income, age, family size, dependency ratio, gender, marital status, occupation and education
2	Çağlayan, & Astar	2012	Consumption Expenditures	household size, gender, education, occupation, age and assets
3	Gounder	2012	Consumption Expenditures	education, family size, gender, marital status
4	Gandhimathi, Ambigadevi, & Sundari	2012	Consumption Expenditure	income, family size and consumption expenditure
5	Sakyi	2012	Expenditure	age, gender, education, household size, dependency ratio, income, and working status
6	Sekhampu	2012	Consumption Expenditure	income, family size, education, gender, and working status
7	Ayo, Bonabana-Wabbi, & Sserunkuuma	2012	Consumption Expenditure	income, age, household size, education, occupation and gender
8	Umeh & Asogwa	2012	Food Expenditure	income, expenditure, household size, age, family size, Dependency ratio, education, working status and land
9	Talukder & Chile	2013	Income and expenditure	land, agriculture income, wage income, other income, food expenditure and non -food expenditure
10	Sekhampu & Niyimbanira	2013	Household Expenditure	income, family size, education, age, working status and occupation
11	Babalola, & Isitor	2014	Food Expenditure	sex ratio Age, education, household size, occupation, house income and expenditure on food
12	Iorlamen, Abu,& Lawal	2014	Food Expenditure	age, gender, household size, income, and education
13	Mignouna, AbdouIaye, Alene, Manyong, Dontsop, Ainembabazi, & Asiedu	2015	Consumption Expenditure	gender, age, education, marital status, occupation, family size, assets and land
14	Venn, Dixon, Banwell, & Strazdins	2018	Household Expenditure	Education, income, working time, food and non-food expenditure
15	Gürler & Demiroglari	2020	Household Education Expenditure	Age, mother and father education, occupation and residence type

$$Y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8 + \beta_9 x_9 + \beta_{10} x_{10} + \ ....+\mu$$

Where,

Y =   ***Per capita consumption expenditure***

x_1 Age   =   Head of the household age in years

x_2	Household size	=	Size of household
x_3	Dependency ratio	=	Percent of non-workers to workers in the family
x_4	Sex ratio	=	Females per 1000 males
x_5	Education	=	Education household head as dummy variable (literate = 1, otherwise =0)
x_6	Crop income	=	Share crop income in total income in percentages (proxy of agriculture occupation)
x_7	Wage income	=	Share wage income in total income in percentages (proxy of Non-agriculture occupations)
x_8	Other income	=	Share of other income in total income in percentages (proxy of other income sources)
x_9	Food expenditure	=	Share of food expenditure in total expenditure in percentage
x_{10}	Non-food expenditure	=	Share of Non-food expenditure in total expenditure in percentage
	μ	=	Error term

α, β_1, β_2, β_3, β_4, β_5, β_6, β_7, β_8, β_9, and β_{10} are the parameters to the estimated, α being the constant.

Determinants of Consumption Expenditure

The results of the above model for Visakhapatnam District are presented in Table – 5.21. Regression coefficients of the independent variables estimated through regression analysis and the coefficient of determination R^2 are presented below Table. In Visakhapatnam District, among explanatory variables, five variables i.e., age, crop income, other income and non-food expenditures, have a significant positive influence, and family size has a significant negative influence on consumption expenditure. The remaining variables have not significant effect on consumption expenditure. The coefficients of education and wage income have positive relation and dependency ratio, sex ratio, and food expenses negatively related to consumption expenditure. The R^2 value is 0.654 reveals that the model was succeeded in explaining the 65.4% variation in the dependent variable and explained by all the variables taken together. For the overall significance of the model, the analysis of the variance approach is used, and f- value is 35.694 (p<0.01), indicating that the overall model was statistically significant.

In Vizianagaram District, six variables, like non-food expenditure and family size, are significant among explanatory variables. The coefficient of non-food expenditure has a positive effect, and family size has a negative effect on consumption expenditure. The remaining variables have not significant influence on consumption expenditure. Variables like education, crop income, other income, and food expenditure have a positive effect, and age, dependency ratio, sex ratio and wage income are observed negatively affecting consumption expenditure. The R^2 value is 0.564 reveals that the model is succeeded in explaining the 56 percent of the variation in the dependent variable by all the independent variables taken together. For the overall significance of the model, analysis of variance approach is used, and f- value is 24.471 (p<0.01), indicating that the overall model is statistically significant.

In Srikakulam District, among ten independent variables, five factors are significant. The coefficients of crop income and non-food expenditure positively affect family size, dependency ratio, and food expenditure negatively affect consumption expenditure. The remaining variables are insignificant because the p-value of this variable is shown at a higher level. Factors like age, sex ratio, and wage income are positive, and education and income are negatively related to consumption expenditure. The value of R^2 is 0.650 for this model indicates that the model is succeeded in explaining a 65.0 percent variation in the dependent variable. A highly significant value 35.170 of F statistic indicates that variables included in the model significantly influence consumption expenditure.

In the sample area, among explanatory variables, five variables like crop income, other income, non-food expenditure, family size and dependency ratio are significant. The coefficients of crop income, other income and non-food expenditures have a positive effect, and family size and dependency ratio negatively affect consumption expenditure. The remaining variables have not significant influence on consumption expenditure. Variables, namely age and education, are found to have a positive effect and sex ratio, wage income, and food expenditure, which have a negative effect on consumption expenditure. The value of R square in following model is 0.556 showing that socio-economic variables can explain about 55.6% of total variation in consumption. Since the calculated f-value = 73.768 is greater than the critical value, hence the model is accepted. It can be concluded that the ratio of explained variance by this model to the unexplained variance is high. Thus the regression variables are significant in explaining the dependent variable.

IV. CONCLUSION

An identical food expenditure pattern has been observed between the OSHG and NSHG households. The average food expenditure of OSHG households was found greater than the NSHG households. The

dissimilar non-food expenditure pattern on different items has been observed across the OSHG and NSHG households. The average non-food expenditure of OSHG households was found less than the NSHG households. Out of the total consumption expenditure, food and non-food items with a relative share of 39.15 percent and 60.85 percent. Thus, the non-food expenditure was observed more than food expenditure in the study areas. The food expenditure of OSHG households was greater than NSHG households, while the non-food expenditure of NSHG households was greater than OSHG households. From non-recurring expenditure, the average non-recurring expenditure of OSHG households was found greater than the NSGH households in North Coastal Districts.

From the study, a higher level of recurring expenditure has been observed in NSHG when compared to OSHG in all cases of the sample area. Contrary, a higher level of non-recurring expenditure has been observed in OSHG when compared to NSHG in all cases of the sample area. As a whole, the recurring expenditure to be found more when compared to non-recurring expenditure. The results of the f-test and z-test revealed that the recurring expenditure and its distribution differ significantly between OSHG and NSHG households. Contrary, the recurring expenditure and its distribution not differing between OSHG and NSHG households in the study area

Table – 8: Determinants of Consumption Expenditure – Visakhapatnam District

Independent Variables	OSHG			NSHG			ALL		
	β	t-value	Sig.	β	t-value	Sig.	β	t-value	Sig.
Constant	27913.158*	6.462	0.000	43054.700*	6.263	0.000	29639.884*	8.473	0.000
Age	183.129*	2.751	0.007	24.786	0.277	0.782	117.956*	2.469	0.014
Household size	-6818.965*	-10.946	0.000	-5862.519*	-7.809	0.000	-5932.769*	-11.975	0.000
Dependency ratio	49.103	1.344	0.182	-20.972	-0.582	0.562	-12.292	-0.493	0.622
Sex ratio	0.097	0.155	0.877	-2.442*	-2.676	0.009	-0.883	-1.564	0.120
Education	-865.998	-0.675	0.501	-5161.500*	-1.801	0.075	115.368	0.098	0.922
Crop income	-11322.15*	-2.018	0.047	7421.761*	2.443	0.017	5003.828*	2.009	0.046
Wage income	-124.260	-0.072	0.943	2076.225	1.045	0.299	1007.876	0.735	0.463
Other income	2317.281	1.403	0.164	9087.723*	2.661	0.009	4451.522*	2.738	0.007
Food expenditure	9623.353*	2.343	0.021	-7464.104	-1.120	0.266	-891.380	-0.245	0.807
Non-food expenditure	3841.369	0.695	0.489	15641.773*	3.967	0.000	19067.881*	6.724	0.000
N	100			100			200		
R²	0.733			0.685			0.654		
Adjusted R²	0.703			0.649			0.635		
F-value	24.482* (0.000)			19.319* (0.000)			35.694* (0.000)		
Source: Computed from primary data. Note: *Significant if p-value < 0.10.									

Table –9: Determinants of Consumption Expenditure – Vizianagaram District

Independent Variables	OSHG			NSHG			ALL		
	β	t-value	Sig.	β	t-value	Sig.	β	t-value	Sig.
Constant	43866.458*	7.414	0.000	39024.172*	7.345	0.000	43115.200*	11.124	0.000
Age	-78.611	-1.120	0.266	23.585	0.311	0.757	-76.903	-1.498	0.136
Household size	-8479.665*	-7.319	0.000	-5774.934*	-7.324	0.000	-6611.080*	-9.446	0.000
Dependency ratio	13.968	0.262	0.794	-12.184	-0.296	0.768	-37.802	-1.157	0.249
Sex ratio	-2.051*	-2.082	0.040	-0.128	-0.161	0.872	-0.890	-1.342	0.181
Education	1903.493	1.169	0.245	-1008.027	-0.589	0.557	351.638	0.309	0.758
Crop income	9061.087	1.227	0.223	-2202.431	-0.465	0.643	1856.494	0.424	0.672
Wage income	-290.763	-0.124	0.901	-2184.167	-1.190	0.237	-1376.688	-0.909	0.364
Other income	-138.041	-0.060	0.952	964.165	0.536	0.594	1031.766	0.700	0.485
Food expenditure	3125.760	0.433	0.666	4428.987	1.063	0.291	3114.817	0.832	0.406
Non-food expenditure	21018.556*	3.512	0.001	-2404.881	-0.645	0.520	8099.932*	2.330	0.021
N	100			100			200		
R²	0.649			0.607			0.564		
Adjusted R²	0.610			0.563			0.541		
F-value	16.458* (0.000)			13.739* (0.000)			24.471* (0.000)		
Source: Computed from primary data. Note: *Significant if p-value < 0.10.									

Table – 10: Determinants of Consumption Expenditure – Srikakulam District

Independent Variables	OSHG			NSHG			ALL		
	β	t-value	Sig.	β	t-value	Sig.	β	t-value	Sig.
Constant	35512.124*	7.073	0.000	29470.353*	12.042	0.000	31241.488*	10.828	0.000
Age	-8.011	-0.117	0.907	7.532	0.199	0.843	3.807	0.089	0.929
Household size	-5551.408*	-8.345	0.000	-2908.145*	-12.311	0.000	-3814.076*	-1.564	0.000
Dependency ratio	4.684	0.136	0.892	-75.603*	-4.179	0.000	-60.032*	-2.997	0.003
Sex ratio	0.569	0.824	0.412	0.201	0.620	0.537	0.092	0.231	0.817
Education	-664.105	-0.448	0.655	-181.309	-0.242	0.809	-353.958	-0.407	0.685
Crop income	7371.082*	2.054	0.043	-820.188	-0.372	0.711	4111.407*	1.841	0.067
Wage income	2520.094	0.828	0.410	-758.561	-0.632	0.529	1204.692	0.768	0.443
Other income	2180.772	0.586	0.560	-2128.977	-1.295	0.199	-268.409	-0.129	0.897
Food expenditure	-42053.84*	-6.286	0.000	-13029.723*	-3.350	0.001	-29599.004*	-7.019	0.000
Non-food expenditure	17595.596*	4.904	0.000	6899.891*	3.224	0.002	14000.058*	6.096	0.000
N	100			100			200		
R²	0.699			0.745			0.650		
Adjusted R²	0.665			0.716			0.632		
F-value	20.661* (0.000)			25.960* (0.000)			35.170* (0.000)		
Source: Computed from primary data. Note: *Significant if p-value < 0.10.									

Table – 11: Determinants of Consumption Expenditure –All Sample Districts

Independent Variables		OSHG			NSHG			ALL	
	β	t-value	Sig.	β	t-value	Sig.	β	t-value	Sig.
Constant	39463.689*	13.749	0.000	33635.668*	10.998	0.000	36269.286*	17.892	0.000
Age	0.618	0.015	0.988	48.518	1.150	0.251	16.185	0.565	0.572
Household size	-6518.174*	-14.203	0.000	-4511.581*	-12.703	0.000	-5332.463*	-18.870	0.000
Dependency ratio	-6.355	-0.266	0.790	-63.896*	-3.118	0.002	-41.547*	-2.740	0.006
Sex ratio	-0.357	-0.745	0.457	-0.492	-1.100	0.272	-0.471	-1.438	0.151
Education	666.371	0.722	0.471	1211.839	1.284	0.200	882.039	1.399	0.162
Crop income	3203.052	1.292	0.197	3697.971*	1.778	0.076	3386.902*	2.110	0.035
Wage income	-630.910	-0.485	0.628	-894.658	-0.817	0.415	-725.764	-0.865	0.387
Other income	2086.744	1.490	0.137	860.603	0.571	0.569	1756.425*	1.793	0.073
Food expenditure	-4141.430	-1.367	0.173	-3415.142	-1.235	0.218	-3227.661	-1.597	0.111
Non-food expenditure	9759.029*	4.085	0.000	6648.429*	3.133	0.002	8364.249*	5.381	0.000
				Model Summary					
N		300			300			600	
R²		0.591			0.537			0.556	
Adjusted R²		0.577			0.521			0.548	
F-value		41.837* (0.000)			35.586* (0.000)			73.768* (0.000)	
Source: Computed from primary data. Note: *Significant if p-value < 0.10.									

In the case of OSHG, the Regression result for consumption expenditure shown that, among explanatory variables, the variables age, education, crop income, other income and non-food expenditure were found a positive effect and family size, dependency ratio, sex ratio, wage income and food expenditure were observed negative effect on consumption expenditure. For the NSHG households, the coefficients of age, education, income, other income and non-food expenditure were found to affect family size positively, sex ratio, dependency ratio, wage income and food expenditure were noticed a negative effect on consumption expenditure.

A higher level of recurring expenditure has been observed in NSHGs when compared to OSHG in all cases of the sample area. Contrary, a higher level of non-recurring expenditure has been observed in OSHG when compared to NSHGs in all cases of the sample area. According to Average Propensity to Consume (APC), OSHG households maintain a minimum level of consumption and less than NSHG households. The study has found that the consumption pattern of OSHG households has improved. Participation with SHG programs helps shift their consumption behavior from lower indicators (food) to standard indicators (non-food). Effective implementation of the schemes through SHGs for their economic improvement is needed for improving their consumption standard.

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