FEMINIZATION OF MULTIDIMENSIONAL POVERTY IN RURAL ODISHA

Surya Narayan Biswal[1], S. K. Mishra[2] & M. K. Sarangi[3]
[1]Doctoral Research Scholar in Economics, Siksha 'O' Anusandhan (Deemed to be University), Bhubaneswar, Odisha, India. ORCID: 0000-0003-3890-3988.
E-mail: suryabiswal100@gmail.com,
[2]Associate Professor in Economics, Siksha 'O' Anusandhan (Deemed to be University), Bhubaneswar, Odisha, India. ORCID ID: 0000-0003-0018-4172.
E-mail: santoshmishra@soa.ac.in / skmtite@gmail.com,
[2]Associate Professor in Economics, Siksha 'O' Anusandhan (Deemed to be University), Bhubaneswar, Odisha, India. ORCID ID: 0000-0002-9231-1601
E-mail: minaketansarangi@soa.ac.in / sarangimk@gmail.com,

Abstract
UNDP's 2030 agenda of Sustainable Development Goals (SDGs) emphasized gender equality in augmenting human capital and alleviating poverty. For eradication of extreme poverty and building resilience for persons who are vulnerable to poverty, SDGs calls for a pro-poor and gender-sensitive policy framework. In this context, a gender-based study on multi-dimensional aspects of poverty is highly significant. Extant literature reveals that females are more deprived in different dimensions of poverty such as education, health, living standard, empowerment, environment, autonomy and social relationship. The present study is conducted with the basic objective of examining feminization of poverty in rural areas of Jagatsinghapur district of Odisha. Seven socio-economic dimensions comprising sixteen indicators have been taken into consideration to construct the Multidimensional Poverty Index (MPI) using the Alkire-Foster (AF) Method at the individual level. The novelty of the study lies in analyzing MPI at the individual level for rural Odisha. Higher female deprivation is observed across social groups and all occupation categories except services. Dummy variable regression analysis also supports the major findings of the study. Complementary Cumulative Distribution Function satisfies strict first-order stochastic dominance condition and substantiates the feminisation of poverty at each level of poverty cut-off across all social groups and occupational categories except for services. The findings of the study have significant implications for developing suitable policies for gender equalization and poverty alleviation.

Keywords: Feminisation, Multidimensional Poverty, MPI, Odisha

1. Introduction

Poverty has been widely recognised as a socio-economic malady that affects ability and productivity of individuals due to deprivation of bare necessities of life including education, health, food, cloth, and shelter (Kumari, 2013; Junofy, 2013). Hitherto to 1970s', poor were numerically recognized by their household income falling short of the monetary value of maintaining minimum necessities of life such as food, cloth, fuel, light, rent etc, (Rowntree, 1901). Because poverty is influenced by numerous non-money-metric dimensions including health, education, standard of living and economic activities, it is recognized as a multidimensional phenomenon that affects persons across gender, age, geographic regions

and ethnic groups (Fransman & Yu, 2019). The first multidimensional measure of poverty traced back to Townsend (1979) but underpinnings of the MPI were set out by Foster *et al.* (1984). But most pioneering work in the field of multidimensional poverty is done by both United Nations Development Programme (UNDP) and Oxford Poverty and Human Development Initiative (OPHI) (Alkire & Santos, 2010; Alkire *et al.*, 2013; Alkire *et al.*, 2014; Alkire *et al.*, 2019; Alkire *et al.*, 2020). Distinct researchers also considered several dimensions, viz., education, health, standard of living, economic/employment, environment, empowerment, and social relationship to analyse multidimensional poverty both at national and regional level (Batana, 2013; Dehury & Mohanty, 2015; Dara & Ramakrishna, 2016; Idrees & Baig, 2017; Mohanty *et al.*, 2017; Montoya & Texeira, 2017; Yichao & Di, 2017; Delgao & Klasen, 2017; Gallardo, 2020; Khan *et al.*, 2020; Biswal *et al.*, 2020; Nam, 2020).

UNDP's 2030 agenda of Sustainable Development Goals (SDGs) calls for a pro-poor and gender-sensitive policy framework for the eradication of extreme poverty and building resilience for persons who are vulnerable to poverty along with the empowerment of women and girls (Chant, 2006; Bradshaw *et al.*, 2017). The incorporation of gender in poverty reduction strategies to achieve Millennium Development Goals is treated as a significant landmark and act as a focal point in the discourse of sustainable socio-economic development (Vyas-Doorgapersad, 2014). Feminization of poverty emerged to address the effect of poverty on both women and men (Adefisoye & Adefisoye, 2020). Women not only suffer from immeasurable violence but also deliberately targeted for harm, ridicule and torture (Kariuki, 2013). If females don't enjoy freedom and opportunities like men, then it is not consistent with human development. Studies on multidimensional poverty are primarily viewed as gender-biased since poverty is nested at the household level, and doesn't give enough information about age, gender or any specific kind of deprivations relating to individuals (Bessel, 2015). In most of the gender-related poverty studies, it is observed that the gender of the household head is taken as a proxy for gender in the absence of the individual level of analysis (Klasen and Lahoti, 2016). This approach will not address the situation where the individual female members have different levels of deprivations in a male-headed household. This calls for studying feminisation of multidimensional poverty at the individual level instead of the household.

Odisha, the 10th largest State in Indian Union with a total population of 41.97 million as per 2011 census, contributes 3.58 per cent of the country's population, and over 5 per cent of the country's poor. Planning commission of India assessed a decrease in the population living below the poverty line in the state from 37.2 per cent in 2004-05 to 21.9 per cent in 2011-12. The state is witnessing poverty due to food insecurity, external migration, political backwardness, and tenuous relationship between resource and livelihood (Sinha *et al.*, 2014; Datta *et al.*, 2015). People of the state face multi-faceted geographical, economic and social issues, which are responsible for common deprivations that lead to economic backwardness of the state (Samantaray, 2016). People are vulnerable to regular natural calamities such as drought, flood, famine, which leads to distress & frustration (Mishra, 2001; Panda & Sahu, 2011; Nath, 2017). Odisha, the 2nd fastest mover among Indian states, is occupying 15th position from the top with an overall score of 58 in SDG index during 2019 (NITI Aayog, Government of India, 2019, p.14-16). Even though the state has received 'Performer' tag during 2019 by scoring 61 in SDG 3 (good health and well-being), 50 in SDG 7 (access to affordable and clean energy), and 59 in SDG 8 (promoting decent work and economic growth), the performance in several other SDG indices are not good enough such as 47 in SDG 1 (no poverty), 34 in SDG 2 (zero hunger), 40 in SDG 4 (quality education), and 35 in SDG 5 (gender equality). Thus analysing multidimensional poverty is highly critical for the inclusive and sustainable growth of Odisha.

With this backdrop, the study tries to (i) assess the magnitude of multi-dimensional poverty through MPI at the individual level across gender, social groups and occupational

structure, and (ii) examine the impact of gender, social group, occupational structure, education and nutritional status on MPI. The remaining of the article is organised as follows: Section 2 presents the review of literature; Section 3 presents data and methodology used in the study; Section 4 summarises the results and findings, and Section 5 concludes.

2. Review of Literature:

In the age of liberalisation, globalisation and technological advancement, the biggest social issue and challenges facing the nation-state in the developing world is poverty. Poverty means lack of basic amenities caused by a negative and unjust society that results in an awful state of human welfare (Nwagbara, *et al.*, 2012; Sinha *et al.*, 2014). Poverty is a basic form of social inequalities that accumulates more of deprivations and emerges in multiple dimensions including education, health, material resources, and social support (Jr & Perales, 2017).

Education enhances the knowledge and skills of the people and allows them to participate in different productive activities. Education allows individuals to participate actively in the sphere of the social, economic, and political system. Several studies relating to global, national and regional level considers completed years of schooling (varying between 5 years and 10 years) and child school enrollment under education dimension of multidimensional poverty (Alkire & Santos, 2010; Alkire *et al.*, 2011; Ashraf & Usman, 2012; Alkire *et al.*, 2013; Alkire *et al.*, 2014; De & Datta, 2014; GC *et al.*, 2015; Sial *et al.*, 2015; Dara & Ramakrishna, 2016; Sheff & Jolliffe, 2016; Dehury & Mohanty, 2017; Gopal, 2018; Ismail *et al.*, 2018; Strotmann & Volkert, 2018; Permanyer & Hussain, 2018; Ntsalaza & Ikhide, 2018; Alkire *et al.*, 2019; Franseman & Yu, 2019; Goli *et al.*,2019; Alkire *et al.*, 2020; Biswal *et al.*, 2020; Zhang *et al.*, 2020).

Good health is fundamental for maintaining an adequate life and poor health limits the productivity of the individuals and restricts them from availing social opportunities. Global MPI includes the nutritional status of the individuals and child mortality indicators under health dimension (Alkire *et al.*, 2011; Alkire *et al.*, 2013; Alkire *et al.*, 2019; Alkire *et al.*, 2020). Several other studies also consider the indicators such as nutritional status of the individuals, child mortality, health insurance of the household members, the immunization status of household members under health dimension to construct MPI at national and regional level (Ashraf & Usman,2012; De & Datta, 2014; Dehury & Mohanty, 2015; Sial *et al.*, 2015; Dara & Ramakrishna, 2016; Dehury & Mohanty, 2017; Gopal, 2018; Idrees & Baig, 2017; Ntsalaze & Ikhide, 2018; Permanyer & Hussain, 2018; Strotmann & Volkert, 2018; Hegde *et al.*,2019; Khan & Shah, 2019, Biswal *et al.*, 2020).

The living standard reflects the quality of life of the individuals that correspond to resources bases like basic housing, access to basic services and assets holding. Several studies relating to multidimensional poverty at global, national and regional level consider different indicators such as housing condition, access to electricity, drinking water, improved sanitation, and clean cooking fuel, possession of self-bank account, assets ownership including ownership of motorcycle under the standard of living dimension (Alkire & Santos, 2010; Ashraf & Usmain, 2012; Alkire *et al.*, 2013, Alkire *et al.*, 2014; De & Datta, 2014; GC *et al.*,2015; Gopal, 2018; Artha & Dartanto, 2018; Permanyer & Hussain, 2018; Pham & Mukhopodhaya, 2018; Strotmann & Volkert, 2018; Alkire *et al.*, 2019; UNDP, 2019; Biswal *et al.*, 2020; Khan *et al.*, 2020).

Employment enhances productive capacity and ability to attain a minimum basket of goods and services that reduce poverty at the household level. Lack of employment opportunities leads to loss of income, which has negative effects on individual's life like psychological stress, loss of motivation and self-confidence, upsurge ailments and morbidity,

disruption of family relationship, social exclusion, and gender unevenness. Therefore, distinct researchers include different indicators such as status of employment, unemployment, underemployment of the household head and other household members under economic/employment dimension for constructing MPI (Ataguba, 2013; Dehury & Mohanty, 2015; Dara & Ramakrishna, 2016; Junior & Perales, 2017; Ntsalaze & Ikhide,2018; Nam, 2020).

Environment plays a crucial role in the sustenance of all living organism. A polluted environment not only degrades the quality of life of common people but also acts as a threatening agent for future survival. The environment-poverty nexus shows that the poor exhausts natural resources such as food, fuel-wood, fodder, construction materials, drinking water which adversely affect the environment (Narain *et al.*, 2008; Uitto, 2016). A good environment at household level improves the health and productivity of its members. Lack of improved sanitation, clean drinking water and the cooking fuel is the main cause of morbidity and mortality in developing nations (Sastry, 1996; Kosek *et al.*, 2003; Mathers *et al.*, 2006). Household solid fuel such as coal, charcoal, wood, dung, and crop residues is the largest source of air pollution (Piddock *et al.*, 2014). Open defecation, mostly observed in rural areas, is treated as a major global health problem (Oreally, 2017). Inadequate sanitation is associated with morbidity from diarrheal disease, soil-transmitted infections, trachoma, and malnutrition (Boisson *et al.*, 2014). Women are not able to practice their daily sanitation routines such as defecation, urination, menstruation, bathing, post-defecation cleaning, carrying water, and changing clothes for lack of adequate access to water (Hulland *et al.*, 2015). Considering the importance of access to clean and safe drinking water, improved sanitation and clean cooking fuel, several studies incorporate environment at household level as a dimension to construct MPI (Dehury & Mohanty, 2015; Dara & Ramakrishna, 2016; Mohanty *et al.*, 2017; Biswal *et al.*, 2020).

People's autonomy in healthcare decision, religion, crime and violence prevention, and job choice also influences multidimensional poverty (Ataguba *et al.*, 2013). An empowered person can freely utilize inner capabilities through knowledge for improving the quality of life. It enhances strong decision-making power, avoid crisis, conflicts and resettle disputes in the society. The social relationship also plays an important role in upgrading human attitude, behaviour and outlook, and thus, considered as a dimension in multidimensional poverty study. Social participation and support extend peoples knowledge, strengthen both internal and external benefit for living properly and helps in eradicating extreme poverty (Junior & Perales 2017; Nowak & Scheicher, 2017; Gallardo, 2020; Nam, 2020).

Gender inequality index constructed by UNDP reflects the multidimensional nature of gendered poverty (Chant, 2006). Men and women experience poverty in different ways and also use diverse mechanisms to overcome those (Jayamohon & Kitesa, 2014). Women are often more likely to be malnourished, less educated and overworked relative to men, vulnerable to fall into and to remain in, poverty (Fontana and Rodgers, 2005; Yichao & Di, 2017). Women are mainly constrained by socio-culturally imposed limitations in the society (Jayamohon & Kitesa, 2014). Gender discrimination and the subordinate nature of women in the society restrict their opportunities in owning property and controlling economic, social and political resources (Arriagada, 2005). Millions of women are still living in poverty across the world; their lives are full of miseries, injustice, discrimination and obstacles on the way of getting their basic needs such as good health, safe childbirth, education and employment (Mishra, 2018). In analyzing rural poverty in Myanmar, Kyaw & Routray (2006) observed that female-headed households are more disadvantaged in the area of education, health, and empowerment. Female-headed households are multidimensionally poor, specifically in income and employment aspects (Nam, 2020). Women have a lower level of job market facilities and hence are more easily vulnerable to poverty than men (Montoya & Teixeira, 2017). Exploring the life of women workers in the workplace, it has been observed that

women's are facing many obstacles like illiteracy, poverty, morbidity, gender-based violence, and caste-based inequities (Thresia, 2007). As, the woman is treated as a second citizen after man (kariuki, 2013), gender equality has an instrumental value in the path of human development (Madan & Gill, 2011).

3. Data and Methodology:

3.1 Data and Sampling Technique

The present study is mainly based on primary data collected through a structured questionnaire during January – March 2020. Multi-stage random sampling method is used to select the sample households. In the first stage, five districts in Odisha having lowest MPI values (OPHI, 2018), viz., Puri (0.057665), Jagatsinghapur (0.063824), Cuttack (0.065944), Khordha (0.072130) and Nayagarh (0.101735) has been selected purposively and Jagatsingpur has been selected finally by using simple random sampling. In the second stage, Naugaon has been selected randomly out of eight blocks. Three villages, i.e., Dhuanpada, Ghodansa and Tentoi have been selected randomly out of ninety villages in the third stage. The fourth stage selects 280 households randomly out of 1001 household (Table 1). RaoSoft online sample size calculator is used to determine the sample size. Out of total 862 household members, 722 adult members in the age group of 18 years and above belonging to the sample households constitute the unit of study.

Table 1: Sampling Frame

Total Household (in No)	Margin of Error	Sample Household Size			Actual Household Surveyed (in No)	Sample Village	Sample Household Size (in No)
		Confidence Interval					
		90%	95%	99%			
1001	5%	214	278	400	280	Dhunpada	50(0.279* 178)
						Ghodansa	98(0.279*351)
						Tentoi	132(0.279* 472)

Source: Authors own computation

3.2 Model and Estimation Techniques

Construction of MPI requires a varied range of dimensions, indicators, cut-offs and weights. The study adopts Alkire-Foster (AF) method (Alkire and Foster, 2011; Alkire *et al.*, 2011) to construct MPI. Seven dimensions, comprising sixteen indicators of multidimensional poverty have been identified (Table 2) to assess MPI for an individual member.

Table 2: Dimensions and Indicators of Multidimensional Poverty

Dimension	Indicator	Symbol	Deprived if she/he…..
Education	Completed years of	SCHOOL	has not completed 6 years of

Dimension	Indicator	Symbol	Deprived if she/he.....
	schooling		schooling
Health	Nutritional Status	NUT	has BMI < 18.5 (underweight) or ≥ 23 (overweight) or ≥ 25 (obesity)
Economic	Employment	EMP	is not engaged in any type of income-earning activities for a minimum of 183 days in the year preceding the survey.
Living standard	Access to electricity	ELECT	has no access to electricity
	Housing condition	HOUS	is living in an inadequate housing condition: The floor is made of mud/clay/earth, sand or dung; or if the dwelling has no roof or walls, or if either the roof or walls are constructed using natural materials such as cane, palm/trunks, sod/mud, dirt, grass/reeds, thatch, bamboo, sticks or rudimentary materials such as carton, plastic/ polythene sheeting, bamboo with mud/stone with mud, loosely packed stones, uncovered adobe, raw/reused wood, plywood, cardboard, unborn brick or canvas/tent.
	Asset ownership	ASSET	has not owned the motorbike
	Land ownership	LAND	has not owned any agricultural/residential land
	Access to Self Bank A/C	BANKAC	has no bank account
Environment	Access to safe drinking water	WATER	has no access to safe drinking water from sources such as piped water, public tap, borehole, and protected well, which requires more than a 30 minutes to-and-fro walk from home.
	Access to improved sanitation	SANIT	is practising open defecation, irrespective of toilet facilities available or not at the household in which she/he is residing.
	Access to clean energy for cooking	ENER	is using dirty fuel such as cow dung, firewood or coal as primary energy for cooking irrespective of the availability of the clean fuel

Dimension	Indicator	Symbol	Deprived if she/he…..
			such as LPG, Kerosene and/or electric stove.
Empowerment	Autonomy in healthcare decisions	AUTHTH	not capable of taking healthcare decision
	Autonomy to prevent crime/violence	AUTPRVCR	not capable of deciding to prevent crime/violence
	Autonomy in job choice	AUTJOB	not capable of making employment decisions
Social Relationship	Participation in community-level activities	COMPAR	has not participated in any community-level activities such as sporting, hubby, club & association, preceding the year of the survey.
	Organisation of community-level activities	COMORG	has not organised any community-level activities such as sporting, hubby, club & association, preceding the year of the survey.

Source: Authors own design

For identifying the deprived and non-deprived individual, each one is assigned a deprivation score (C_i) basing on deprivation in the component indicator (h_i) as the first cut-off. The following equation is used for computation of individual deprivation score.

$$C_i = w_1h_1 + w_2h_2 + ... + w_ih_i$$

Where, w_i is the weight assigned to the ith indicator.

If the individual is deprived in i^{th} indicator then $h_i = 1$ and for non-deprived $h_i = 0$. Individual deprivation score (C_i) lies in between '0' and '1', where '0' and "1" indicates non-deprivation and complete deprivation respectively in all the indicators. The study assigns equal weightage to all dimensions and all indicators under each dimension (Table 3).

Table 3: Dimensions and Indicators of Multidimensional Poverty with Relative Weights

Dimensions of Poverty	Relative Weight	Indicator	Relative Weight
Education	1/7	SCHOOL	1/7
Health	1/7	NUT	1/7
Economic	1/7	EMP	1/7
Living Standard	1/7	ELECT	1/35
		HOUS	1/35
		ASSET	1/35

Dimensions of Poverty	Relative Weight	Indicator	Relative Weight
		LAND	1/35
		BANKAC	1/35
Environment	1/7	WATER	1/21
		SANIT	1/21
		ENER	1/21
Empowerment	1/7	AUTHTH	1/21
		AUTPRVCR	1/21
		AUTJOB	1/21
Social Relationship	1/7	COMPAR	1/14
		COMORG	1/14

Source: Authors own design

A threshold is used to identify multi-dimensional poverty. In this study, an individual with a deprivation score below 0.2 is treated as non-poor (Non-poor); between 0.2 and 0.3333 as vulnerable to multi-dimensionally poor (Vulnerable MDP); between 0.3333 and 0.5 as multi-dimensionally poor (MDP); and 0.5 or higher as severely multi-dimensionally poor (Severe MDP).

Association of multidimensional poverty with gender, social group and occupational structure is tested through chi-square test. Z test is used to test the statistical significance of the difference between the proportion of male and female coming under multidimensional poverty.

Dummy variable multiple regression model (Gujarati & Porter, 2009) has been used to investigate the influence of gender (GEN), social group (SOCGR), occupational structure (OCCUP), education (EDN) and nutrition (NUT) on multidimensional poverty. The following model is specified for the study.

$$MPI = \alpha_1 + \beta_1 GEN + \beta_2 SOCGR + \beta_3 OCCUP + \beta_4 EDN + \beta_5 NUT + \varepsilon_i$$

Where, α_1 is constant, β_1 to β_5 represent coefficients of independent variables and ε_i is the error term.

The robustness of the study is tested through Complementary Cumulative Distribution Function (CCDF) as proposed by Alkire *et al.* (2015). The CCDF demonstrates the proportion of the population deemed to be poor by setting the poverty cut-off at any level between '0' and '1'. The present study constructs CCDF for gender across all social groups and occupational categories to examine whether female deprivation dominates male at all levels of poverty cut-off and satisfies strict first-order stochastic dominance condition or not.

4. Results and Findings:

4.1 Sample Characteristics

The sample for this study consists of 722 household members in the age group 18 years and above, comprising 386 (53.46%) males and 336 (46.54%) females. The dominance of SEBC

is observed in the sample for both females and males (Table 4). Among females, about 90% are non-workers. Highest percentages of male work in the private sector (35%). More than half of household members (both female and male) possess normal weight.

Table 4– Sample Profile

Variable	Category	Female (in %)	Male (in %)	Total (in %)
Age	Less than 18 year	17.0	15.5	16.2
	18 year and Above	83.0	84.5	83.8
Social Group	General	4.8	5.4	5.1
	OBC	17.0	17.6	17.3
	SC	11.3	11.7	11.5
	SEBC	67.0	65.3	66.1
Occupational Group	Business	1.5	17.9	10.2
	Cultivation	1.2	14.5	8.3
	Daily Wage Earner	2.4	6.5	4.6
	Govt. Service	2.1	7.0	4.7
	Private Service	1.2	35.0	19.3
	Other Economic Activities	1.2	1.8	1.5
	Non Worker	90.5	17.4	51.4
BMI CODE	Under Weight	0.3	0.5	0.4
	Normal Weight	53.0	64.2	59.0
	Over Weight	46.7	35.2	40.0

Source: Authors own design

4.2 Assessment of Multi-dimensional Poverty

The study observed the incidence of multidimensional poverty in the study area (Figure 1). About 70% of total individuals are either multidimensional poor or severely multidimensional poor. The dominance of females is observed under MDP and severely MDP categories indicating gender bias of multidimensional poverty against females (96% for females and 47% for males). SEBC under the social group and non-workers under occupational categories has the highest percentage of persons coming under MDP and severely MDP. Persons employed in government service, private service and business are less deprived in terms of multidimensional poverty because of their regular and stable earning capability. Pearson Chi-

square test of independence confirms the association of multidimensional poverty with gender, social group and occupational structure at 5% level of significance.
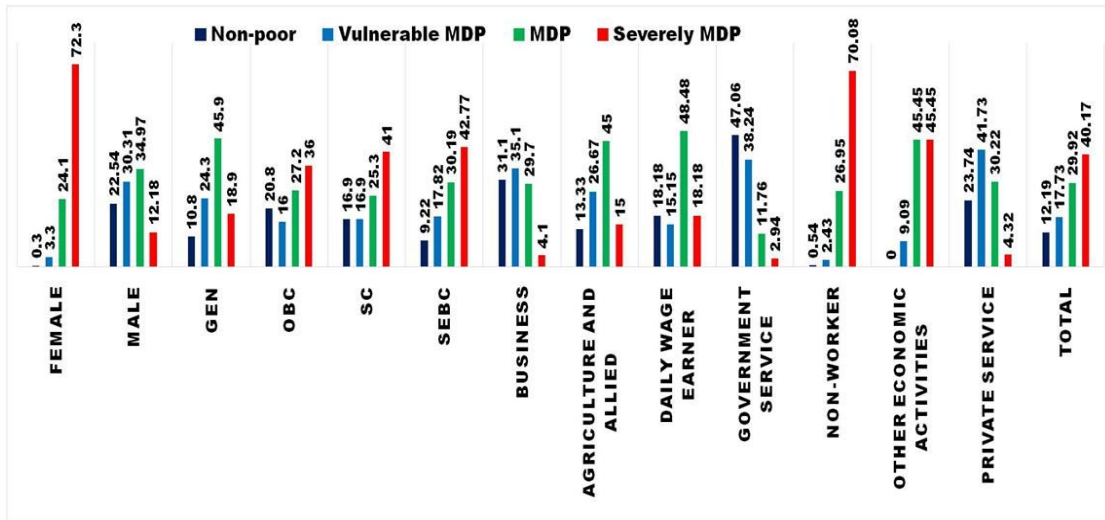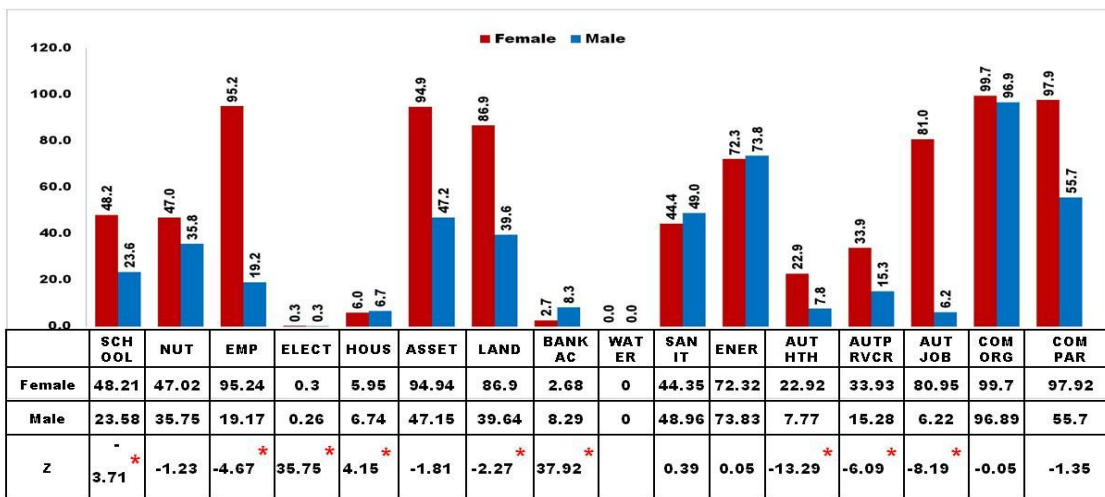

Source: Authors own design

Figure 1: Status of Multidimensional Poverty across Gender, Social Group and Occupational Structure

4.3 Feminisation of Multidimensional Poverty

Figure 2 displays the deprivation status of male and female across all indicators of multidimensional poverty. Female-male gap in respect of 9 indicators, i.e., SCHOOL (23.58), EMP (76.07), ELECT (0.04), HOUS (- 0.78), LAND (47.27), BANKAC (- 5.61), AUTHTH (15.14), AUTPRVCR (18.64), and AUTJOB (74.73) are statistically significant at 1% level of significance. Of these, female deprivation is observed in respect of indicators except housing condition, and access to the self-bank account. The highest female-male gap is observed in respect of employment and autonomy of job choice which might be due to family norms, cultures and systems prevailing in the study area where women prefer to undertake economic activities at home along with their household responsibilities.

	SCHOOL	NUT	EMP	ELECT	HOUS	ASSET	LAND	BANKAC	WATER	SANIT	ENER	AUTHTH	AUTPRVCR	AUTJOB	COMORG	COMPAR
Female	48.21	47.02	95.24	0.3	5.95	94.94	86.9	2.68	0	44.35	72.32	22.92	33.93	80.95	99.7	97.92
Male	23.58	35.75	19.17	0.26	6.74	47.15	39.64	8.29	0	48.96	73.83	7.77	15.28	6.22	96.89	55.7
z	-3.71 *	-1.23	-4.67 *	35.75 *	4.15 *	-1.81	-2.27 *	37.92 *		0.39	0.05	-13.29 *	-6.09 *	-8.19 *	-0.05	-1.35

*indicates significance at 1% level

Source: Authors own design

Figure 2: Gender-wise Deprivation status in different indicators of Multidimensional Poverty (in %)

The study observed a higher proportion of females coming under severely MDP in comparison to males for OBC, SC and SEBC which are statistically significant (Table 5). Significant female-male gap (in proportion) is observed for non-workers in respect of MDP and severely MDP. Further, females in private jobs are more prone to vulnerable to MDP in comparison to their male counterpart. In severely MDP, the proportion of females outnumbered males for all categories.

Table 5: Gender Dimension of Multidimensional Poverty across Social Groups and Occupational Categories (in %)

Category	Gender	Non-poor	Vulnerable to MDP	MDP	Severely MDP
All Categories	Female	0.3	3.3	24.10	72.30
	Male	22.54	30.31	34.97	12.18
	F-M Gap	-22.51(-0.53)	-27.01(-1.91)	-10.13(-1.67)	**60.12(7.80)***
Social Group					
General	Female	0.0	6.3	56.2	37.5
	Male	19.0	38.1	38.1	4.8
	F-M Gap	-19.0	-31.8(-0.63)	18.1(0.75)	32.7(0.65)
OBC	Female	1.8	3.5	22.8	71.9
	Male	36.8	26.5	30.8	5.9
	F-M Gap	-35.0(-0.72)	-23.0(-0.72)	-8.0(-0.51)	**66.0(2.66)***
SC	Female	0.0	7.9	28.9	63.2
	Male	31.1	24.5	22.2	22.2
	F-M Gap	-31.1	-16.6(-0.625)	6.7(0.352)	**41.0(2.175)***
SEBC	Female	0.0	2.2	21.4	76.4
	Male	17.5	31.7	38.1	12.7
	F-M Gap	-17.5	-29.5(-1.398)	**-16.7(-2.02)***	**63.7(7.012)***
Occupational Category					
Non-worker	Female	0	1	23	76
	Male	3	9	44.7	43.3
	F-M Gap	-3	-8(-0.463)	**-21.7(-2.18)***	**32.7(3.711)***

Category	Gender	Non-poor	Vulnerable to MDP	MDP	Severely MDP
Daily Wage Earner	Female	0	0	25	75
	Male	24	20	56	0
	F-M Gap	-24	-20	-31(0.821)	75
Agriculture and Allied Activities	Female	0	0	50	50
	Male	14.3	28.6	44.6	12.5
	F-M Gap	-14.3	-28.6	5.4(0.146)	37.5(1.152)
Business	Female	0	0	80	20
	Male	33.3	37.7	26.1	2.9
	F-M Gap	-33.3	-37.7	**53.9(2.033)***	17.1(0.498)
Private Service	Female	0	100	0	0
	Male	24.4	40	31.2	4.4
	F-M Gap	-24.4	**60(2.332)***	-31.2	-4.4
Govt Service	Female	14.3	57.1	28.6	0
	Male	55.6	33.3	7.4	3.7
	F-M Gap	-41.3(-0.801)	23.8(0.807)	21.2(0.551)	-3.7
Other Activities	Female	0	0	25	75
	Male	0	14.3	57.1	28.6
	F-M Gap	0	-14.3	-32.1(-0.575)	46.4(1.026)

NB: It is not possible to estimate Z-value for the cases where either the proportion of female or male is zero. Figure in parenthesis indicates Z value of testing two proportions *and* *indicates statistically significant at 5% level.

Source: Authors own computation

Factors influencing multidimensional poverty are assessed through a dummy-variable regression model. The regression result shows a good model fit as indicated by the F ratio which is statistically significant at 1% level of significance (Table 6). The model explains about 83% variation in MPI by gender, social group, occupational categories and nutrition status of individuals taken together. Social groups have no statistically significant impact on MPI. The constant in the model indicates that a male, non-worker and normal-weight (as measured by BMI) person belonging to the general group will possess an MPI of 0.572 on an average. Other things remaining constant, if an individual is female, the MPI increases to 0.648 (0.572 + 0.076) indicating feminisation of multidimensional poverty. All occupational categories have lower MPI in comparison to non-workers as indicated by the negative sign of regression

coefficients. Education has a significant effect on lowering MPI. One additional year of schooling reduced MPI by 0.016. The coefficients of underweight and overweight (measured by BMI) are positive, justifying an increase in MPI for persons coming under either underweight or overweight category.

Table 6: Dummy Variable Multiple Regression Model

	Unstandardised Coefficient		T
	B	Std. Error	
CONSTANT	0.572	0.018	31.866*
DFEMALE	0.076	0.009	8.058*
DOBC	-0.009	0.016	-0.597
DSEBC	0.004	0.014	0.282
DSC	0.014	0.017	0.865
DBUSINESS	-0.219	0.013	-17.183*
DAGRICULTURE	-0.179	0.014	-13.065*
DWAGEEARNER	-0.144	0.016	-8.847*
DGOVTSER	-0.225	0.016	-13.867*
DPVTSER	-0.170	0.011	-15.141*
DOTHER	-0.035	0.026	-1.314
DOVERWEIGHT	0.132	0.006	20.740*
DUNDERWEIGHT	0.227	0.048	4.736*
SCHOOLING	-0.016	0.001	-22.262*
No. of Observations	722		
F ratio	259.549*		
R Square	0.827		
Adj R Square	0.823		

*indicates significance at 1% level

Source: Authors own computation

Education has been promulgated as primary weapon against the poverty (Njong, 2010). Education breaks vicious circle of poverty and social marginalization which further improve quality of life and attain social welfare (Arsani *et al.,* 2020). Education fosters self-understanding; improve quality of life; and increases productivity of people that promotes entrepreneurship spirit and technological advancement (Aref, 2011; Omoniyi, 2013). The

present study, through regression analysis, observed the positive impact of education in reducing poverty, which supports the earlier studies made by Njong (2010), Gounder & Xin (2012), Niazi & Khan (2012) and Arsani *et al.* (2020). But, we go a step forward in assessing the impact of education on different groups of multidimensional poverty across gender. For this, a hypothetical exercise has been carried out by increasing the educational level of each observation by one year. Correspondingly, the MPI for each observation has been reduced by 0.016 (regression coefficient for education in Table 6) and then the total 722 observations have been categorised into four groups, viz., non-poor, vulnerable to MDP, MDP and severely MDP across gender. The result of this workout is given in Table 7. It is observed that after one year increase in educational level 34 persons belonging to MDP and severely MDP (4.70% of total) crossed the poverty trap and find a place in either non-poor or vulnerable to MDP. Analysis of change of poverty through educational intervention, other things remaining same, across gender gives a different picture. Increase in educational level by one year favours male most in comparison to female. Out of 34 persons coming out of poverty, 31 (91%) are males and only 3 (9%) are females. The lower level of educational attainment along with the responsibility of females for household activities, in the prevailing culture and tradition in rural coastal Odisha, might be the reason for the lower impact of education on multidimensional poverty for females.
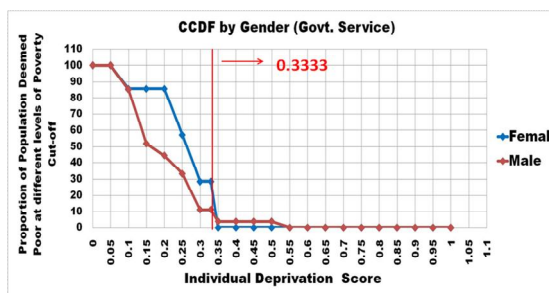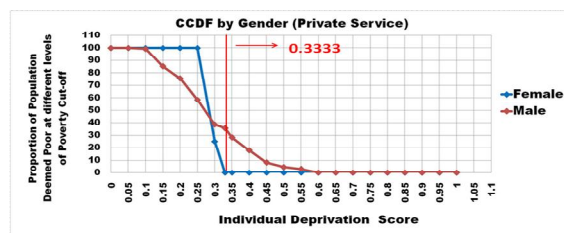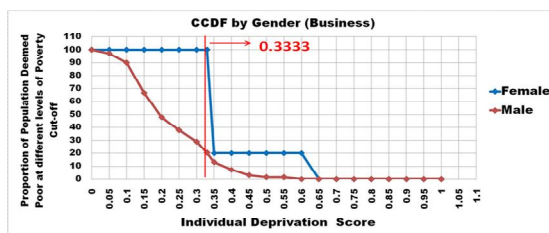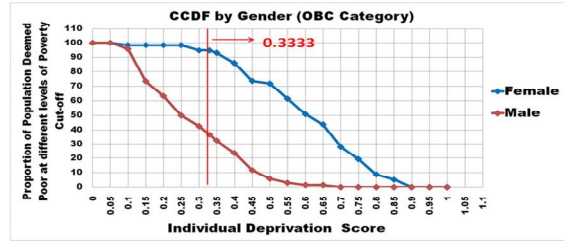
Table 7: Education and Multidimensional Poverty

Category		Non-poor		Vulnerable to MDP		MDP		Severely MDP	
		No	%	No	%	No	%	No	%
Male	Before change in educational level	87	22.54	117	30.31	135	34.97	47	12.18
	After change in educational level	100	25.91	135	34.97	111	28.76	40	10.36
	Change	13	3.37	18	4.66	-24	-6.22	-7	-1.81
Female	Before change in educational level	1	0.30	11	3.27	81	24.11	243	72.32
	After change in educational level	1	0.30	14	4.17	88	26.19	233	69.34
	Change	0	0.00	3	0.90	7	2.08	-10	-2.98
Total	Before change in educational level	88	12.19	128	17.73	216	29.92	290	40.16
	After change in educational level	101	13.99	149	20.64	199	27.56	273	37.81
	Change	13	1.80	21	2.90	-17	-2.35	-17	-2.35

Source: Authors own computation

4.4: Complementary Cumulative Distribution Function

CCDF satisfies the strict first-order stochastic dominance condition indicating the dominance of females over males at all cut-off level of multidimensional poverty for all social groups and occupational categories except for services. For government service, female dominance is observed before the cut-off point of 0.3333 whereas for private services it is after the said cut-off (Fig. 3).

CCDF by Gender (Overall)

CCDF by Gender (SC Category)

CCDF by Gender (SEBC Category)

CCDF by Gender (OBC Category)

CCDF by Gender (General Category)

CCDF by Gender (Non Worker)

CCDF by Gender (Daily Wage Earner)

CCDF by Gender (Agriculture and Allied Activities)

CCDF by Gender (Business)

CCDF by Gender (Private Service)

CCDF by Gender (Govt. Service)

CCDF by Gender (Other Activities)
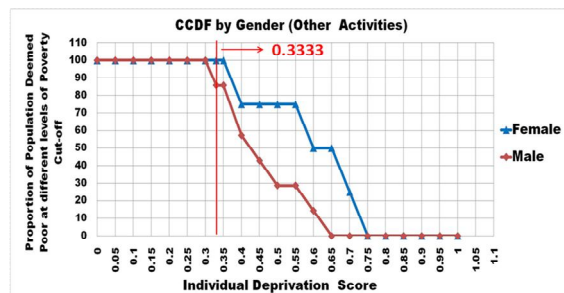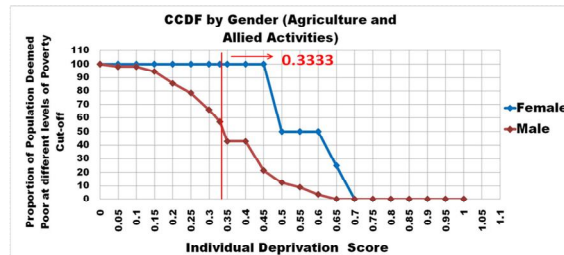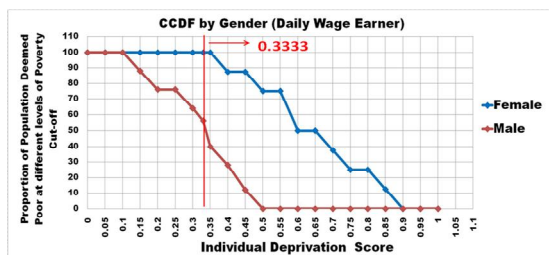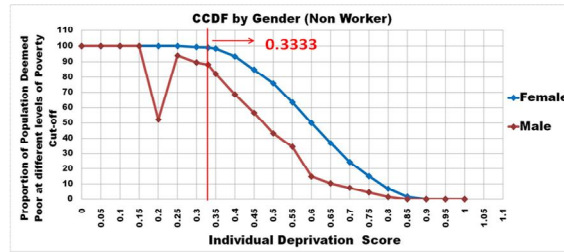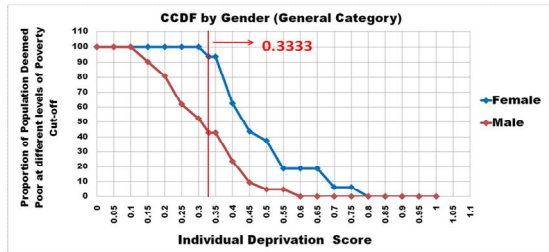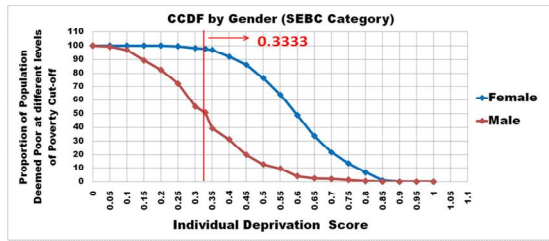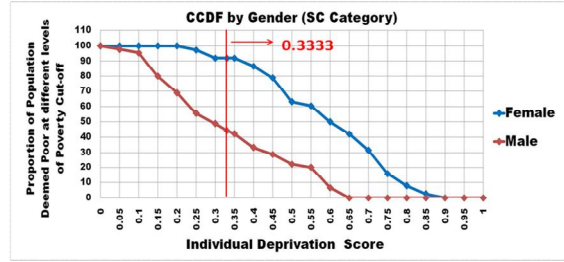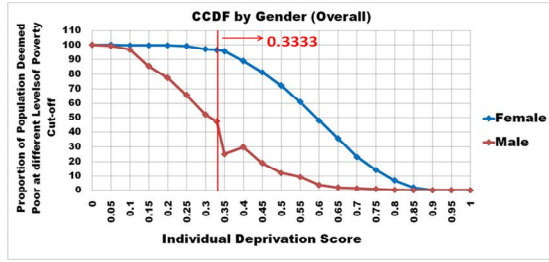
Source: Authors own construct

Figure 3: Gender wise Complementary Cumulative Distribution Function

5. Summary and Conclusion:

This study, the first of its kind for rural Odisha, is undertaken with the basic objective of studying feminisation of multidimensional poverty at the individual level. The study observed that females have been deprived off in almost every indicators of multidimensional poverty except sanitation, use of clean energy, and possession of the self-bank account.

Lower educational level and economic deprivation of women are observed to be the most important reasons for the feminisation of multidimensional poverty. Prevailing social culture, tradition and norms compel rural females, particularly of coastal rural Odisha, to assign priority to household activities. They can only get economic independence if they can do some economic activity in addition to their household duties. Therefore, the study suggests for creation of adequate income-generating opportunities with the supportive environment for females in the rural areas to enable them to pursue income-generating activities during leisure times in addition to their commitment to household responsibilities. In this context, creation of Self-help Groups (SHGs) is an answer in enhancing the income of rural women. But its success is limited by the generation of adequate demand for the products produced by them. Therefore, it is suggested that government policies need to be reoriented towards the creation of adequate marketing channels for the products of SHGs in addition to their formation. In this regard, it is worth to cite the example of OMFED in increasing the income of women dairy farmers in rural areas of Odisha.

The study echoes the role of education in lowering multidimensional poverty. Government of Odisha is committed to providing free primary and secondary education for all girls and boys, affordable vocational training and universal access to quality higher education. For this, various schemes such as Right to Education Act, Early Childhood Care and Education (ECCE) programme and learning enhancement programmes (LEP), namely Ujjwal, Utthan and Utkarsh are under implementation in the State. Still, "the dropout rates in the case of both primary and upper primary education have increased over the years in the State, which is a matter of concern." (Planning and Convergence Department, Government of Odisha, 2020, p.167-174). Implementation of new programmes along with the execution of existing programmes to reduce the dropouts can help in bringing down multidimensional poverty.

References

Adefisoye, T.O. & Adefisoye, D.I. (2020). COVID-19, Governments' Response and the Feminisation of Poverty: Ekiti State, Nigeria in Perspective. *Journal of Education Research and Rural Community Development, 2*(1), 15-31.

Alkire, S. & Foster, J. (2011). Counting and multidimensional poverty measurement. *Journal of public economics, 95* (7-8), 476-787. https://doi.org/10.1016/j.jpubeco.2010.11.006

Alkire, S. & Santos, M.E. (2010). Multidimensional Poverty Index. *OPHI*, 1-8.

Alkire, S., Conconi, C., Seth, S. & Vaz, A. (2014). Global Multidimensional Poverty Index 2014. *Oxford Poverty and Human Development Initiative,* 1-2.

Alkire, S., Dirksen, J., Nogales, R. & Oldiges, C. (2020). Multidimensional Poverty and COVID-19 Risk Factors: A Rapid Overview of Interlinked Deprivations across 5.7 Billion People. *Oxford Poverty and Human Development Initiative, OPHI,* 1-8.

Alkire, S., Foster, J., Seth, S., Santos, M.E., Roche, J.M. & Ballón, P. (2015). Multidimensional Poverty Measurement and Analysis. Oxford: Oxford University Press. USA. 233-238.

Alkire, S., Kanagaratnam, U. & Suppa, N. (2019). Global Multidimensional Poverty Index (MPI). *OPHI MPI Methodological Note, 47,* 1-28.

Alkire, S., Roche, J.M. & Seth, S. (2013). Multidimensional Poverty Index 2013. *Oxford Poverty and Human Development Initiative*, 1-8.

Alkire, S., Roche, J.M., Santos, M.E. & Seth, S. (2011). Multidimensional Poverty Index 2011: Brief Methodological Note. *Oxford Poverty and Human Development Initiative*, 1-14.

Aref, A. (2011). Perceived impact of education on poverty reduction in rural areas of Iran. *Life Science Journal, 8*(2), 498-501.

Arriagada, I. (2005). Dimensions of poverty and gender policies. *Cepal Review, 85*, 99-110.

Arsani, A.M., Ario, B., & Ramadhan, A.F. (2020). Impact of Education on Poverty and Health: Evidence from Indonesia. *Economics Development Analysis Journal, 9*(1), 87-96.

Artha, D.R.P. & Dartanto, T. (2018). The Multi-Dimensional Approach to Poverty Measurement in Indonesia: Measurements, Determinants and its Policy Implications. *Journal of Economic cooperation, 39*(3), 1-38.

Ashraf, F. and Usman, M. (2012). Acute Multidimensional Poverty: A New Index for Punjab. *International Journal of Scientific and Engineering Research, 3*(9), 1-5.

Ataguba, J.E.O., Ichoku, H.E., & Fonta, W.M. (2013). Multidimensional poverty assessment: applying the capability approach. *International Journal of Social Economics, 40*(4), 331-354.

Batana, Y.M. (2013). Multidimensional measurement of poverty among women in Sub-Saharan Africa. *Social Indicators Research, 112*(2), 337-362. https://doi.org/10.1007/s11205-013-0251-9

Bessell, S. (2015). The Individual Deprivation Measure: Measuring Poverty as if Gender and Inequality Matter. *Gender & Development, 23*(2), 223-240. https://doi.org/10.1080/13552074.2015.1053213

Biswal, S.N., Mishra, S.K. & Sarangi, M.K. (2020). Nexus between Multidimensional Poverty and Household Environment: A case study of Naugaon block of Jagatsinghpur district. In S. Patra & A.P. Nanda (Ed.). Development, Environment and Sustainability (1st ed., 37-54). New-Delhi, India: Kunal Books.

Boisson, S., Sosai, P., Ray, S., Routray, P., Torondel, B., Schmidt, W.P., Bhanja, B. & Clasen, T. (2014). Promoting latrine construction and use in rural villages practicing open defecation: process evaluation in connection with a randomised controlled trial in Orissa, India. *BMC research notes, 7*(1), 1-12.

Bradshaw, S., Chant, S., & Linneker, B. (2017). Gender and poverty: what we know, don't know, and need to know for Agenda 2030. *Gender, Place & Culture, 24*(12), 1667-1688. https://doi.org/10.1080/0966369X.2017.1395821

Chant, S. (2006). Re-thinking the "Feminization of Poverty" in Relation to Aggregate Gender Indices. *Journal of Human Development, 7*(2), 201-220. https://doi.org/10.1080/14649880600768538

Dara, N.R. & Ramakrishna, R. (2016). Determinants of Income Inequalities and multidimensional Poverty among SC/STs in Andhra Pradesh: Micro-level Evidence. *IOSR Journal of Economics and Financ, 7*(3), 42-54.

Datta, D., Pradhan, S.K., & Chhotaray, D. (2015). Poverty and Vulnerability Amid Plenty: Perspectives of People in the Highland Forested Region of Odisha, India. *Journal of Poverty, 19*(1), 41-70.

De, S., & Datta, K. (2014). Multidimensional poverty index of Totos-The smallest and primitive tribe in Jalpaiguri district of West Bengal. *Economic Affairs, 59*(4), 605-612.

Dehury, B., & Mohanty, S.K. (2015). Regional estimates of multidimensional poverty in India. *Economics, 9*(36), 1-35.

Dehury, B., & Mohanty, S.K. (2017). Multidimensional poverty, household environment and short-term morbidity in India. *Genus, 73*(1), 1-23. https://doi.org/10.1186/s41118-017-0019-1

Delgao J.E. & Klasen, S. (2017). Gender and Multidimensional Poverty in Nicaragua, An Individual-based Approach. Courant Research Centre: Poverty, Equity and Growth. Discussion Papers. No.235. Georg-August-Universität Göttingen, Courant Research Centre - Poverty, Equity and Growth (CRC-PEG), Göttingen.

Fontana, M. & Rodgers,Y.V.D.M. (2005). Gender Dimensions in the Analysis of Macro Poverty Linkages. *Development Policy Review, 23*(3), 333-349.

Foster, J., Greer, J., & Thorbecke, E. (1984). A class of decomposable poverty measures. *Econometrica, 52*(3), 761-766.

Fransman, T., & Yu, D. (2019). Multidimensional poverty in South Africa in 2001–16. *Development Southern Africa*, *36*(1), 50-79.

Gallardo, M. (2020). Measuring vulnerability to multidimensional poverty. *Social Indicators Research*, *148*(1), 67-103. https://doi.org/10.1007/s11205-019-02192-y

GC, D.B., Cheng, S., Bhandari, J., Xiaojie, L., & Xu, Z. (2015). Multidimensional poverty in Bajhang district of Nepal. *Pakistan Journal of Agricultural Sciences*, *52*(4), 1131-1137.

Goli, S., Maurya, N.K., Moradhvaj, & Bhandari, P. (2019). Regional Differentials in Multidimensional Poverty in Nepal: Rethinking Dimensions and Method of Computation. *SAGE Open*, *9*(1), 1-8. https://doi.org/10.1177/2158244019837458

Gopal, P.S. (2018). Poverty measurement revisited from a multidimensional perspective among UniversitiSains Malaysia's B40 poor students. *Geografia- Malaysian Journal of Society and Space*, *14*(4), 299-307.

Gounder, R., & Xing, Z. (2012). Impact of education and health on poverty reduction: Monetary and non-monetary evidence from Fiji. *Economic Modelling*, *29*(3), 787-794.

Gujarati, D.N., & Porter, D.C. (2009). Basic econometrics. 5th Ed. McGraw-Hill International Edition, Boston. 277-314.

Hegde, G.N., Devarani, L., Lahiri, B., Datta, K.K., & Hemochandra, L. (2019). Child Multidimensional Poverty and its Determinants in Rural Farm-Households of Garo Hills. Meghalaya. *Economic Affairs*, *64*(2), 459-467. https://doi.org/10.1080/0376835X.2018.1469971

Hulland, K.R.S., Chase, R.P., Caruso, B.A., Swain, R., Biswal, B., Sahoo, K.C., Panigrahi, P. & Dreibelbis, R. (2015). Sanitation, stress, and life stage: a systematic data collection study among women in Odisha, India. *PloS ONE*, *10*(11), 1-17.

Idrees, M. & Baig, M. (2017). An Empirical Analysis of Multidimensional Poverty in Pakistan. *FWU Journal of Social Sciences*, *11*(1), 297-309.

Ismail, M.K., Siwar, C., & Ghazali, R. (2018). Gahaiagropolitan project in eradicating poverty: Multidimensional poverty index. *Planning Malaysia*, *16*(7), 97-108.

Jayamohan, M.K. & Kitesa, A.T. (2014). Gender and poverty–an analysis of urban poverty in Ethiopia. *Development Studies Research*, *1*(1), 233-243.

Junior, A.M. & Perales, F. (2017). The Dynamics of Multidimensional Poverty in Contemporary Australia. *Social Indicators Research*, *130*, 479-496.

Junofy, A.R.N. (2013). A study on poverty and hunger in India. *Mediterranean Journal of Social Sciences*, *4*(12), 147-153.

Kariuki, J.G. (2013). Feminization of poverty in Kenya: The Case of Abagusii and Agikuyu Women of Kenya. *International Journal of Social Sciences and Entrepreneurship*, *1*(5), 372-383.

Khan A.U. & Shah, A.H. (2019). Reflections of Multidimensional Poverty across Agro-Climatic Zones: Evidence from the Punjab Province of Pakistan. *Journal of Poverty*, *24*(2), 130-146. https://doi.org/10.1080/10875549.2019.1668898

Khan, M., Rizwan, M. & Ahmad, T. (2020). An empirical analysis of monetary and multidimensional poverty: evidence from a household survey in Pakistan. *Asia Pacific Journal of Social Work and Development*, *30*(2), 1-17. https://doi.org/10.1080/02185385.2020.1712663

Klasen, S. & Lahoti, R. (2016). How Serious is the Neglect of Intra-Household Inequality in Multi-dimensional Poverty Indices?. Courant Research Centre, Georg-August-Universität Göttingen. Discussion paper No. 200. 1-44. http://dx.doi.org/10.2139/ssrn.2742083

Kosek, M., Bern, C., & Guerrant, R.L. (2003). The global burden of diarrhoeal disease, as estimated from studies published between 1992 and 2000. *Bulletin of the world health organization*, *81*, 197-204.

Kumari, L. (2013). Poverty eradication in India: A study of national policies plans and programs. *Researchers World*, *4*(2), 68-80.

Kyaw, D. & Routray, J.K. (2006). Rural poverty assessment with gender dimension in Myanmar. *Asia-Pacific Journal of Rural Development*, *16*(2), 1-30.

Madan, S. & Gill, K.K. (2011). Human Development and Gender: A Feminist Perspective of Haryana. *Journal of Economic and Social Development*, *7*(2), 48-61.

Mathers, C.D., Lopez, A.D., & Murray, C.J. (2006). The burden of disease and mortality by condition: data, methods and results for 2001. *Global burden of disease and risk factors*, *45*, https://doi.org/10.1596/978-0-8213-6262-4

Mishra, S. (2018). Feminization of Poverty and Dimension of Women's Agencies. *Asian Journal of Multidisciplinary Studies*, *6*(2), 93-100.

Mishra, S.K. (2001). Poverty and Economic Change in Kalahandi, Orissa. The Unfinished Agenda and New Challenges. *Journal of Social and Economic Development*, *3*(2), 245-265.

Mohanty, S.K., Agrawal, N.K., Mahapatra, B., Choudhury, D., Tuladhar, S., & Holmgren, E.V. (2017). Multidimensional poverty and catastrophic health spending in the mountainous regions of Myanmar, Nepal and India. *International journal for equity in health*, *16*(21), 1-23. https://doi.org/10.1186/s12939-016-0514-6

Montoya, Á.J.A., & Teixeira, K.M.D. (2017). Multidimensional poverty in Nicaragua: Are female-headed households better off? *Social Indicators Research*, *132*(3), 1037-1063. https://doi.org/10.1007/s11205-016-1345-y

Nam, S.J. (2020). Multidimensional Poverty among Female Householders in Korea: Application of a Latent Class Model. *Sustainability*, *12*(2), 1-11. https://doi.org/10.3390/su12020701

Narain, U., Gupta, S. & Veld, K.V. (2008). Poverty and the Environment: Exploring the Relationship between Household Incomes, Private Assets, and Natural Assets. *Land Economics*, *84* (1), 148–167.

Nath, S. (2017). Poverty under the colonial rule and peasantry in Orissa. *International Journal of Applied Research*, *3*(4), 20-24.

Niazi, M. I., & Khan, A. (2012). The impact of education on multidimensional poverty across the regions in Punjab. *Journal of Elementary Education*, *21*(1), 77-89.

NITI Aayog, Government of India (2019). SDG India Index & Dashboard 2019-20. 14-16. Retrieved from https://niti.gov.in/sdg-india-index-dashboard-2019-20

Njong, A.M. (2010). The effects of educational attainment on poverty reduction in Cameroon. *International Journal of Educational Administration and Policy Studies*, *2*(1), 1-8.

Nowak, D., & Scheicher, C. (2017). Considering the extremely poor: Multidimensional poverty measurement for Germany. *Social Indicators Research*, *133*(1), 139-162.

Ntsalaze, L., & Ikhide, S. (2018). Rethinking dimensions: the South African multidimensional poverty index. *Social Indicators Research*, *135*(1), 195-213.

Nwagbara, E.N., Abia, R.P., Uyang, F.A., & Ejeje, J.A. (2012). Poverty, environmental degradation and sustainable development: a discourse. *Global Journal of Human Social Science, Sociology, Economics and Political Science*, *12*(11), 1-19.

Omoniyi, M.B.I. (2013). The role of education in poverty alleviation and economic development: A theoretical perspective and counselling implications. *British Journal of Arts and Social Sciences*, *15*(2), 176-185.

OPHI (2018). 2018 global MPI resources [India disaggregation by district]. Available from https://ophi.org.uk/2018-global-mpi-resources/

O'Reilly, K., Dhanju, R., & Goel, A. (2017). Exploring "the remote" and "the rural": open defecation and latrine use in Uttarakhand, India. *World Development*, *93*, 193-205.

Panda, R.K. & Sahu, A. (2011). Trends and dimensions of Rural Poverty in Orissa. *Orissa Review*, *68*(2 & 3), 101-107.

Permanyer, Y & Hussain, M.A. (2018). First Order Dominance Techniques and Multidimensional Poverty Indices: An Empirical Comparison of Different Approaches. *Social Indicators Research*, *137*, 867-893. https://doi.org/10.1007/s11205-017-1637-x

Pham, A.T.Q, & Mukhopadhaya, P. (2018): Measurement of Poverty in Multiple Dimensions: The Case of Vietnam. *Social Indicators Research*, *138*, 953-990.

Piddock, K.C., Gordon, S.B., Ngwira, A., Msukwa, M., Nadeau, G., Davis, K.J., Nyirendra, M.J. & Mortimer, K. (2014). A cross-sectional study of household biomass fuel use among a periurban population in Malawi. *Annals of the American Thoracic Society*, *11*(6), 915-924.

Planning and Convergence Department, Government of Odisha (2020). Economic Survey 2019-20. 167-174. Available from https://pc.odisha.gov.in/publication/economic-survey-report

Rowntree, B. S. (1901). Poverty: A Study of Town Life. London: Macmillan and Co.

Samantaray, L.L. (2016). A Study On The Issues Of Distress Migration Of KBK Districts of odisha And The Role of Reverse Migration(Urban-Rural)In Augmenting Various Measures Taken By The Government For ITS Solution. *IOSR-Journal of Humanities And Social Science*, *21*(5), 41-47.

Sastry, N. (1996). Community characteristics, individual and household attributes, and child survival in Brazil. *Demography*, *33*(2), 211-229.

Seff, I., & Jolliffe, D. (2016). Multidimensional poverty dynamics in Ethiopia: how do they differ from consumption-based poverty dynamics? *Ethiopian Journal of Economics*, *25*(2), 1-35.

Sial, M.H., Noreen, A. & Awan, R.U. (2015). Measuring Multidimensional Poverty and Inequality in Pakistan. *The Pakistan Development Review*, *54*(4), 6845-698.

Sinha, M.K., Nanda, P. & Kumar, A. (2014). Dynamics of Poverty & Food Insecurity in Orissa: Macro Analysis and Case Studies. MPRA Paper No.5543, 1-12.

Strotmann, H., & Volkert, J. (2018). Multidimensional poverty index and happiness. *Journal of Happiness Studies*, *19*(1), 167-189.

Thresia, C.U. (2007). Interplay of gender inequities, poverty and caste: implications for health of women in the cashew industry of Kerala. *Social Medicine*, *2*(1), 8-18.

Townsend, P. (1979). Poverty in the United Kingdom: a survey of household resources and standards of living. University of California Press.

Uitto, J.I. (2016). The Environment-poverty Nexus in Evaluation: Implications for the Sustainable Development Goals. *Global Policy*, *7*(3), 441-447.

UNDP Sierra Leone (2019). Sierra Leone Multidimensional Poverty Index 2019. *Oxford Poverty and Human Development Initiative*, UNDP.

Vyas-Doorgapersad, S. (2014). Gender equality in poverty reduction strategies for sustainable development: the case of South African local government. *Journal of Social Development in Africa*, *29*(2), 105-134.

Yichao, W. & Di, Q. (2017). A gender-based analysis of multidimensional poverty in China. *Asian Journal of Womens Studies*, *23*(1), 66-88. https://doi.org/10.1080/12259276.2017.1279886

Zhang, Z., Wang, A., & Li, H. (2020): What matters for the overall reduction of multidimensional poverty? Evidence from rural China. *Applied Economics Letters*, *27*(20), 1685-1690.

Surya Narayan Biswal is currently Doctoral Research Scholar in Economics in the Department of Humanities & Social Sciences, Siksha 'O' Anusandhan (Deemed to be University), Odisha, India. He has to his credit more than 04 years of research experience in ICAR. He has presented more than 8 research papers in national and international level conferences. He is a life member of OEA.

S. K. Mishra, Ph.D. is currently Associate Professor in the Department of Humanities & Social Sciences, Siksha 'O' Anusandhan (Deemed to be University), Odisha, India. He has more than 15 years of teaching and 05 years of research experiences. He has to his credit more than 40 research papers published in various journals and edited books of national and international in repute. He has presented more than 20 research papers in national and international level conferences. His areas of specialization include development and quantitative economics. He is a life member of the WEA, TIES, ISTE and OEA.

M. K. Sarangi, Ph.D. is currently Associate Professor in the Department of Humanities & Social Sciences, Siksha 'O' Anusandhan (Deemed to be University), Odisha, India. He has more than 15 years of teaching and 22 years of research experiences. He has to his credit more than 15 research papers published in various journals and edited books of national and international in repute. He has presented more than 14 research papers in national and international level conferences. His areas of specialization include development and public economics. He is a life member of the WEA, and OEA.