RESILIENCE TO SHOCKS OF COVID-19 PANDEMIC AMONG RURAL HOUSEHOLDS IN OGBOMOSO AGRICULTURAL ZONE OF OYO STATE, NIGERIA

Orimafo[1], P.K; Adeyemo[1], P.A; Adebiyi[2], F.M; Adeyemi[1], F.G and Adewole[1], W.A.

1. Department of Agricultural Extension and Rural Development, Ladoke Akintola University of Technology, Ogbomoso, Oyo State.
2. Department of Agricultural Economics, Ladoke Akintola University of Technology, Ogbomoso, Oyo State.

Correspondence should be addressed to Orimafo P. K (Ph.D): pat4knight@gmail.com

Abstract

COVID-19 is pitching the world economy towards a global recession, implying the impact of COVID-19 across the global economy will be profound. Emerging evidence on the impact of COVID-19 suggests that rural's economic and productive lives will be affected disproportionately and differently from urban centres. However, different efforts had been adopted to curtail this menace but resilience to shocks of Covid-19 pandemic anticipation cost especially among rural households in Ogbomoso Agricultural zone of Oyo State, Nigeria is yet to be documented. The study therefore assessed resilience to shocks of Covid-19 pandemic among rural households in Ogbomoso Agricultural Zone of Oyo State, Nigeria. Multistage sampling procedure was employed to select 90 respondents for this study. The data were obtained with the aid of a questionnaire and data were analyzed using both descriptive (frequency count, percentage and mean) and inferential (Linear Regression Analysis) statistics using SPSS version 22. The result of the analysis showed that friends/relatives with a Weighted Mean Score (WMS) of 2.90 was the major source of awareness of Covid-19 pandemic among the respondents. The finding also revealed the major flexibility in decision making with a WMS of 2.58, livelihood/income diversification with a WMS of 2.54 and seeking assistance from government with a WMS of 2.53 were the major adaptive capacities adopted in addressing shocks of Covid-19 pandemic. Moreover, production of high value added crops with a WMS of 2.82, skills training/acquisition opportunities with a WMS of 2.40 and the use of remittance with a WMS of 2.34 were the major absorptive capacities adopted by the respondents. Also, participation in village co-operative society with a WMS of 2.86 and early warning system with a WMS of 2.47 were the major transformative capacities adopted by the respondents. The result of linear regression analysis indicated that level of awareness of Covid-19 pandemic ($t = 3.436$; $p = 0.001$) is positively related to resilience to shocks of Covid-19 pandemic among rural households and was statistically significant at 1% level. It was concluded that different resilience strategies were adopted which had significant influence on the rural households in addressing the shocks of Covid-19 pandemic in Ogbomoso Agricultural zone of Oyo State, Nigeria. Moreover, it was found that awareness of Covid-19 pandemic incidences had a decisive influence on the level of use of resilience strategies thereby cushioning the effects of the Covid-19. There is therefore need for all stakeholders in rural development to expedite efforts to create more awareness on the existences of Covid-19 pandemic as well educating them on amiable coping or resilience strategies in tackling the effects.

Keywords: COVID-19, rural, resilience, shocks, awareness, livelihoods, households

INTRODUCTION

Inequalities in human development represent a lack of capabilities for a large part of the population. During crises, these inequalities tend to increase, at least in the short run. So, the priority should be reducing these gaps by boosting the capabilities of those who were already falling behind before the crisis (Levy, 2020; UN, 2020b; UN, 2020c; World Bank, 2020). A strategy consistent with this principle depends on the availability of resources. Without savings, insurance systems or access to capital markets, the national and international public sector has to step in and facilitate transfers to overcome transitory shocks. This requires assistance to those who are being asked not to work or be economically active. The support for basic capabilities is crucial to contain the indirect negative effects of COVID-19 on people. Enhanced capabilities—access to technology, knowledge and quality health services—are not a luxury. They play a key role in dealing with the crisis, in both adaptation and mitigation.

Rural communities can be understood as vulnerable social ecological systems (SES) that need to build resilience to withstand internal and external stresses from social, economic, political and health status changes (Adger, 2000, Wilson *et al*., 2013). It has been argued that many aspects of adaptive capacity reside in social networks (Adger, 2003) and that these are a crucial source of resilience (Folke *et al*., 2005, Folke, 2006, Berkes and Ross, 2013). This applies in particular to rural communities in the Sub-Sahara Africa where often a lack of access to resources, knowledge, and functioning institutions is a major obstacle to sustainable development (Etzold *et al*., 2012).

During the last decades, resilience has emerged as a key concept across disciplines for investigating responses to changes in human and ecological systems (Folke *et al*., 2010), and more recently, the global health systems (Human Development Report Office based on PAHO (2020)), resulting in a variety of ways in which resilience is understood, investigated, and applied (Downes *et al*., 2013). From a concept originally concerned with the persistence of ecological systems in the context of external disturbances (Holling, 1973), resilience has developed through a concept underlining the role of adaptive capacity for navigating coupled SES (Gunderson and Holling 2002, Berkes *et al*., 2003) to one emphasizing the transformation of SES in the face of global change (Walker *et al*., 2004, Folke, 2006, Folke *et al*., 2010). Attention has thus widened from the ecological to include also the social dimensions of resilience (Adger, 2000, Cote and Nightingale, 2012). This comprises, for example, human

agency, social learning, and the skills and capacities of social actors to cope with, adapt to change, and facilitate transformation (Folke *et al*., 2010, Moore and Westley, 2011, Berkes and Ross, 2013, Keck and Sakdapolrak, 2013, Skerratt, 2013, Cretney, 2014, Ifejika, Speranza *et al*., 2014).

People's capabilities play a key role in the response to the COVID-19 crisis. Nonpharmaceutical interventions are linked to enablers that make the intervention less costly or facilitate its success (Human Development Report Office based on PAHO, 2020). All the interventions represent a form of social distancing that affects peoples' ability to interact with others in work, school, shopping, recreation and social life. The enablers might reduce the human development losses associated with COVID-19 restrictions in multiple dimensions, opening alternative capabilities: access to goods and services, access to income-generating activities, access to education and access to social life and recreation opportunities. They both increase the likelihood of the interventions' success and reduce their human development costs (Chiou and Tucker, 2020). In other words, without these enablers there is the risk of a tragic choice between nonpharmaceutical interventions at an extenuating human cost and lack of nonpharmaceutical intervention effectiveness.

Most of the enablers are related to enhanced capabilities—the new necessities of the 21st century—which are unequally distributed across the population. As documented by the 2019 Human Development Report, gaps have been widening over the past few years (UNDP, 2019). These enhanced capabilities can reduce the impact of the downtime to overcome the health crisis caused by COVID-19. Thus, in low human development communities, non-pharmaceutical interventions will tax people's welfare more and thus can also be less effective. Forming enhanced capabilities—even during these critical times—would reduce such disparities. The emphasis on enhanced capabilities does not mean that the work on basic capabilities is done. On the contrary: 785 million people still lack access to basic sources of clean water, and around 3 billion people lack a basic hand washing facility with soap and water in their household (UN, 2019).79 Failing to address basic capabilities in the response to the COVID-19 crisis could even reverse the convergence documented in the 2019 Human Development Report.

Investigations into the role of resilience capacities especially through social networks during social, economic and ecological changes is growing at a fast pace (Videras, 2013). However, there are limited investigations into its application during global health crises as it

remains scattered across different strands of research, with related but separate research agendas. With this paper, we provide a systematic analysis of different aspects relevant to the resilience of rural communities to the shock of Covid-19 pandemic. From the foregoing, there is need for an assessment of resilience to shocks of Covid-19 pandemic among rural households in Ogbomoso Agricultural Zone of Oyo State, Nigeria. The study was design to:

(1) describe the socio-economic characteristics of the rural family in Ogbomoso Agricultural Zone of Oyo State, Nigeria;

(2) determine the sources of awareness of Covid-19 pandemic; and

(3) ascertain the resilience to shocks of Covid-19 pandemic among rural households in the study area.

2.0 METHODOLOGY

2.1. Study Area: The study was carried out in Ogbomoso Agricultural Zone of Oyo State, Nigeria.

2.2. Sampling Technique: A multi-stage sampling technique was used to select 90 respondents which involves purposive selection of three Local Government Areas (Oriire, Surulere and Ogo-Oluwa) which are rural in nature. Random selection of 3 wards out of 14 wards from each of the selected Local Government Areas. Ten (10) rural households each from the selected wards were randomly chosen for the study.

2.3. Data Collection Instrument: Data collection from the respondents was mainly through structured questionnaire. Information contained in the structured questionnaire were based on the objectives of the study.

2.4. Measurement of variables: The age of the respondent was measured in years, marital status was measured as single (1), married (2), separated (3) and widowed (4), household size measured as actual number of household member while primary occupation was measured as farming (1), herding (2), trading (3), civil servant (4) and artisan activities (5). Moreover, sources of awareness of Covid-19 pandemic and resilience (Absorptive, adaptive and transformative) to shocks of Covid-19 pandemic anticipation cost were both measured on 3 point scale of very often (3), often (2), rarely (1) and not at all (0).

2.5. Methods of Data Analysis: Data were analyzed using both descriptive (frequency count, percentage, weighted mean score and mean) and inferential (Linear Regression Analysis) statistics using SPSS version 22.

3.0 RESULTS AND DISCUSSIONS

3.1 Socio-economic Characteristics of the Respondents

Table 1 below shows the socio-economic characteristics of the respondents. The mean age of all the respondents was approximately 50 years while that of male and female were 50 and 51 which implies that majority of these respondents are still in their active years and productive age. This finding is in line with the report of Umen *et al.* (2013) which pointed out that many rural dwellers are still in their active and energetic ages and still find pleasure in agricultural activities. The distribution of the households by marital status shows that majority of the respondents were married (92.5%). Moreover, majority of the male (95.7%) and female (93.4%) of the respondents were married. This finding is in collaboration with other findings which established the fact that most rural households are married with the sole aim of child bearing (Apata and Shittu, 2012). The mean value of the household size is approximately 6. This is in line with the report of Nkiru and Elizabeth (2009) which stated that large families appeared to be more participating in local livelihood activities in order to cater for their family needs. Majority of the respondents engaged primarily in farming (67.8%; 70.1% male and 60.7% of female). The study corroborates the World Bank (2006) in the work titled "Where is the wealth of nations? Measuring capital for the 21st century" where more than 60.0 percent of their respondents engaged in farming (agriculture-dependent).

Table 1: Distribution of respondents by Socio-economic Characteristics (n = 90)

Socio-economic	Male (n = 67)		Female (n = 23)		Pooled (n = 90)	
Characteristics	**Freq.**	**Percentage**	**Freq.**	**Percentage**	**Freq.**	**Percentage**
Age						
≤ 30	0	0.0	1	4.3	1	1.1
31 – 40	8	12.0	2	8.7	10	11.1
41 – 50	26	38.8	10	43.5	36	40.0
51-60	25	37.2	8	34.8	33	36.7
Above 60	8	12.0	2	8.7	10	11.1

Mean	51		50		51	
Marital status						
Single	2	3.0	1	4.3	3	3.3
Married	62	92.5	22	95.7	84	93.4
Separated	0	0.0	0	0.0	0	0.0
Widowed	3	4.5	0	0.0	3	3.3
Household size						
1 – 2	1	1.5	0	0.0	1	1.1
3 – 4	2	3.0	1	4.3	3	3.3
5 – 6	40	59.7	13	56.5	53	58.9
Above 6	24	35.8	9	39.2	33	36.7
Mean	6		6		6	
Primary occupation						
Farming	47	70.1	14	60.9	61	67.8
Herding	2	3.0	0	0.0	2	2.2
Trading	7	10.4	3	13.0	10	11.1
Civil servant	3	4.5	1	4.3	4	4.4
Artisan activities	8	11.9	5	21.7	13	14.5

3.2a Sources of awareness of Covid-19 pandemic in the study area

Based on the result in the Table 2a, the sources of awareness of Covid-19 pandemic identified in the study area in their rank order include friends/relatives (WMS = 2.90), radio (WMS = 2.89), religious gathering (WMS = 2.88), social organization (WMS = 2.84), community leaders (WMS = 2.70), political leaders (WMS = 2.23), government official (WSM = 2.10), NCDC (WMS = 1.97), television (WMS = 1.72), posters (WMS = 1.41), newspapers/bulletin (WMS = 1.26), NGO (WMS = 0.98), social media platforms (WMS = 0.31) and internet (WMS = 0.27). Moreover, radio (WMS = 2.91) was the major source of awareness of Covid-19 pandemic among the male respondents while religious gathering (WMS = 2.96) was the major source of awareness of Covid-19 pandemic among the female respondents. It was revealed that the major sources of awareness of Covid-19 pandemic range from radio, religious

gathering, friends/relatives and social organization in the study area. The finding therefore indicates that diverse sources were utilized to create awareness of Covid-19 pandemic.

Table 2a: Distribution of respondents by sources of awareness of Covid-19 pandemic (n = 90)

Sources of awareness of Covid-19 pandemic	Frequency of occurrence					
	Male		Female		Pooled	
	WMS	Rank	WMS	Rank	WMS	Rank
NCDC	1.93	8th	2.09	6th	1.97	8th
Radio	2.91	1st	2.83	2nd	2.89	2nd
Television	1.81	9th	1.48	9th	1.72	9th
Friends/relatives	2.90	2nd	2.91	3rd	2.90	1st
Newspapers/bulletin	1.30	12th	1.13	12th	1.26	12th
Internet	0.24	15th	0.35	14th	0.27	15th
Social media platforms	0.30	14th	0.35	14th	0.31	14th
Community leaders	2.72	5th	2.65	5th	2.70	5th
Social organization	2.85	3rd	2.83	3rd	2.84	4th
Religious gathering	2.85	3rd	2.96	1st	2.88	3rd
Political leaders	2.28	6th	2.09	6th	2.23	6th
Posters	1.40	11th	1.43	10th	1.41	11th
NGO	0.66	13th	1.13	12th	0.98	13th
Government official	2.13	7th	2.00	8th	2.10	7th
School management	1.55	10th	1.30	10th	1.49	10th

Table 2b: Distribution of respondents by categorization of level of awareness of Covid-19 pandemic (n = 90)

Categorization of level of awareness of Covid-19 pandemic	Male (n = 67)		Female (n = 23)		Pooled (n = 90)	
	Freq.	Percentage	Freq.	Percentage	Freq.	Percentage

Low	12	34.3	3	13.0	15	16.7
Medium	42	62.7	15	65.2	57	63.3
High	13	19.4	5	21.8	18	20.0
Mean	27.82		27.52		27.74	
Standard dev.	5.947		4.601		5.610	

3.3 Resilience to shocks of Covid-19 pandemic anticipation cost

Table 3 presents resilience to shocks of Covid-19 pandemic anticipation cost. Based on the result in the table 3, flexibility in decision making (WMS = 2.58), livelihood/ income diversification (WMS = 2.54), Seeking assistance from government (WMS = 2.53) were the major adaptive capacities employed in cushion the effects of Covid-19 pandemic. Moreover, production of high value added crops (cashew, cassava, pineapple) (WMS = 2.82), skills training/ acquisition opportunities (hair-dressing, craft, weaving, basket making, and other minor repair works) (WMS = 2.40), use of remittance (WMS = 2.34) were the major absorptive capacity adopted while participation in village co-operative society (WMS = 2.86), better access to market for business transaction (WMS = 2.77), improved access to knowledge and information (early warning system) (WMS = 2.47) were the dominants transformative capacities among the respondents. Some enhanced capabilities (such as access to new technologies) play a crucial role from the economic side. Households with access to modern technologies are better equipped to maintain economic interactions, including education, continuity of work activities (telecommuting) and access to telemedicine and to consumer goods ordered online. Households without access to the internet and other technologies have fewer options (reducing even their ability to apply for and receive government support). Thus, improving access to devices and the internet is another policy to address inequalities, building people's capabilities to face the COVID-19 restrictions without losing key social interactions, including those that might generate income. As the 2019 Human Development Report documented, policies supporting equality can promote equality in basic and enhanced capabilities while also promoting inclusive growth (UNDP, 2019).

Table 3: Distribution of respondents by Resilience to shocks of Covid-19 pandemic anticipation cost

Resilience to shocks of Covid-19 pandemic anticipation cost	WMS	Rank
Adaptive capacities		
Seeking assistance from government	2.53	3rd
Livelihood/ income diversification	2.54	2nd
Labour migration	1.73	5th
Improved livelihood security (Building fences to protect crops or flocks)	1.07	11th
Access to productive assets	2.08	4th
Flexibility in decision making	2.58	1st
Rely on less preferred foods	1.72	6th
Limit portion size at mealtimes	1.40	8th
Borrow food or rely on help from a friend or relative	1.24	10th
Reduce number of meals eaten in a day	1.41	7th
Restrict consumption by adults in order for small children to eat	1.36	9th
Absorptive capacity		
Use of remittance	2.34	3rd
Access to insurance /social safety net	2.16	4th
Skills training/ acquisition opportunities (hair-dressing, craft, weaving, basket making, and other minor repair works)	2.40	2nd
Production of high value added crops (cashew, cassava, pineapple)	2.82	1st
Transformative capacities		
Better access to market for business transaction	2.77	2nd
Participation in village co-operative society	2.86	1st
Adequate access to institutions and entitlement	2.12	5th
Better access to electricity	2.01	6th
Better access to infrastructure	2.01	6th
Improved access to knowledge and information (early warning system)	2.47	4th
Supporting new practices and change	2.53	3rd

WMS = Weighted Mean Score

Human Development Report Office based on PAHO, 2020

3.4 Influence of level of awareness of Covid-19 pandemic on resilience to shocks of Covid-19 pandemic

The result of linear regression analysis (Table 4) indicated that level of awareness of Covid-19 pandemic (t = 3.436; p = 0.001) is positively related to resilience to shocks of Covid-19 pandemic among rural households and was statistically significant at 1% level. The R-value for the relationship stands at 0.344 which implies that level of awareness of Covid-19 pandemic had about 34.4% decisive influence on the resilience to shocks of Covid-19 pandemic among rural households. Moreover, it was found that awareness of Covid-19 pandemic incidences had a decisive influence on the level of use of resilience strategies. It must be emphasized vividly here that awareness of the reality of crisis often times services as an impetus for a more proactive developmental actions which may likely attract both external and internal supports/enablers. For instance, the enablers might reduce the human development losses associated with COVID-19 restrictions in multiple dimensions, opening alternative capabilities: access to goods and services, access to income-generating activities, access to education and access to social life and recreation opportunities. They both increase the likelihood of the interventions'success and reduce their human development costs (Chiou and Tucker, 2020). In other words, without these enablers there is the risk of a tragic choice between nonpharmaceutical interventions at an extenuating human cost and lack of nonpharmaceutical intervention effectiveness.

Table 4: Result of Linear regression analysis of relationship between sources of awareness of Covid-19 pandemic and resilience to shocks of Covid-19 pandemic anticipation cost

Variable	B-Value	Std. Error	T-Value	P-Value
Constant	42.266	2.514	16.815	0.000
Resilience index	0.305	0.089	3.436***	0.001

R-Value = 0.344 (34.4%)

4.0 CONCLUSION AND RECOMMENDATIONS

It was concluded that different resilience strategies were adopted which had significant influence on the rural households in addressing the shocks of Covid-19 pandemic in Ogbomoso Agricultural zone of Oyo State, Nigeria. Moreover, it was found that awareness of Covid-19 pandemic incidences had a decisive influence on the level of use of resilience strategies thereby cushioning the effects of the Covid-19. There is therefore need for all stakeholders in rural

development to expedite efforts to create more awareness on the existences of Covid-19 pandemic as well educating them on amiable resilience strategies in tackling the effects.

REFERENCES

Adger, W. N. (2000). Social and ecological resilience are they related? *Progress in Human Geography* 24:347-364.

Apata, O.M and Shittu, G.A (2012). Evaluation of Socio-economic Characteristics that Determine Transaction with Mobile Bankers among Farming Households in South-Western, Nigeria. *International Journal Agricultural Economics and Rural Development-5 (1): 2012.P 61.*

Berkes, F., and H. Ross. (2013). Community resilience: toward an integrated approach. *Society and Natural Resources* 26:5-20.

Berkes, F., J. Colding, and C. Folke, editors. (2003). *Navigating socialecological systems: building resilience for complexity and change.* Cambridge University Press, Cambridge, UK. http://dx.doi.org/10.1017/cbo9780511541957.

Chiou, L., and C. Tucker. (2020). "Social Distancing, Internet and Inequality." Working Paper 26982. National Bureau of Economic.

Cote, M., and A. J. Nightingale. (2012). Resilience thinking meets social theory: situating social change in socio-ecological systems (SES) research. *Progress in Human Geography* 36(4):475-489.

Cretney, R. (2014). Resilience for whom? Emerging critical geographies of socio-ecological resilience. *Geography Compass* 8:627-640.

Davis, Steven J., and Till von Wachter (2011). “Recessions and the costs of job loss.” Brookings Papers on Economic Activity, no. 2:1–72.

Downes, B. J., F. Miller, J. Barnett, A. Glaister, and H. Ellemor. (2013). How do we know about resilience? An analysis of empirical research on resilience, and implications for interdisciplinary praxis. *Environmental Research Letters* 8:1-8.

Etzold, B., S. Jülich, M. Keck, P. Sakdapolrak, T. Schmitt, and A. Zimmer. (2012). Doing institutions. A dialectic reading of institutions and social practices and its relevance for development geography. *Erdkunde* 66:185-195.

Folke, C. (2006). Resilience: the emergence of a perspective for social-ecological systems analyses. *Global Environmental Change* 16:253-267.

Folke, C., S. R. Carpenter, B. Walker, M. Scheffer, T. Chapin, and J. Rockström. (2010). Resilience thinking: integrating resilience, adaptability and transformability. *Ecology and Society* 15(4):20.

Gunderson, L. H., and C. S. Holling. (2002). *Panarchy: understanding transformations in human and natural systems.* Island Press, Washington, D.C., USA.

Holling, C. S. (1973). Resilience and stability of ecological systems. *Annual Review of Ecology and Systematics* 4:1-23.

Ifejika Speranza, C., U. Wiesmann, and S. Rist. (2014). An indicator framework for assessing livelihood resilience in the context of social-ecological dynamics. *Global Environmental Change* 28:109-119.

Keck, M., and P. Sakdapolrak. (2013). What is social resilience? Lessons learned and ways forward. *Erdkunde* 67:5-19.

Moore, M., and F. Westley. (2011). Surmountable chasms: networks and social innovation for resilient systems. *Ecology and Society* 16(1):5.

Nkiru, T.M. and Elizabeth, N.E. (2009). Enhancing Sustainable Participation in Local Livelihood Activities by the Refugees in Nigeria. Stud Tribes Tribals 7(2): 131-136.

Skerratt, S. (2013). Enhancing the analysis of rural community resilience: evidence from community land ownership. *Journal of Rural Studies* 31:36-46.

Umen, S.I, Ede, Onuh, N.C, Ndukauba, J and Nnadozie (2013). Factors Determining the Adoption of Recommended Cocoyam Production Technologies in Owerri West L.G.A, Imo State. Proceedings of 47th Annual Conference of Agricultural Society of Nigeria held in Moor Plantation, Ibadan Oyo State. Pp.638-643.

UNDP (United Nations Development Programme). (2019). *Human Development Report 2019: Beyond Income, beyond Averages, beyond Today: Inequalities in Human Development in the 21st Century*. New York.

Unitd Nations (2020c). "Shared Responsibility, Global Solidarity: Responding to the Socio-Economic Impacts of COVID-19." March. https://www.un.org/sites/un2.un.org/files/sg_report_socio-economic_impact_of_covid19.pdf.

United Nations (2020b). "UN Working to Ensure Vulnerable Groups Not Left Behind in COVID-19 Response." https://www.un.org/en/uncoronavirus-communications-team/un-working-ensure-vulnerable-groups-not-left-behind-covid-19.

United Nations. (2019). *The Sustainable Development Goals Report 2019*. New York.

Videras, J. (2013). Social networks and the environment. *Annual Review of Resource Economics* 5:211-226.

Walker, B., C. S. Holling, S. R. Carpenter, and A. Kinzig. (2004). Resilience, adaptability and transformability in social-ecological systems. *Ecology and Society* 9(2):5.

World Bank (2006). Where is the wealth of nations? Measuring capital for the 21st century. World Bank, Washington, DC.

World Bank. (2020). "East Asia and Pacific in the Time of COVID-19." East Asia and Pacific Economic Update, April. World Bank, Washington, DC. https://openknowledge.worldbank.org/bitstream/handle/10986/33477/9781464815652.pdf?sequence=5&isAllowed=y.