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IRJEE SOCIETY OF EXTENSION EDUCATION

RESEARCH ARTICLE

Factors Influencing Source of Coping Strategies in Health in Marine Fishers During COVID-19 Pandemic: An Exploratory Study of Kerala, India

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ABSTRACT

The southwestern state of Kerala has long been considered a model on account of its achievement in health and education at relatively lower levels of income. During the pandemic, the state achieved global attention in the handling of the pandemic and while there was universal acceptance of the role of the government in providing and maintaining health, the idea of health itself was widened to include aspects of well-being and the role of the community including neighborhood groups were prominent in the state. Thus, one could say that health and healthcare provision underwent a vital shift. As public health broadened to include aspects of well-being, there was a greater need to bring in communities and their perspectives as providers and facilitators of health, rather than as recipients of health services alone. In this aspect of constructing a novel approach to health provision, we believe our study based on the impact of COVID-19 on the marine fisheries sector proves to be particularly illuminating. We explore the various coping strategies in health (Institutional, economic and social) as well as sources that provide institutional, social and economic health strategies-whether it is the government, community, or self/family. Further, we try to find if socio-demographic factors influence the choices of the individual. Our findings point out that while universal policies in provision especially during events like the pandemic are crucial; there is a need to focus on individual factors affecting the choices. This could potentially assist in more equitable and efficient accessing and utilising the resources.

Key words: *Health strategies; Covid pandemic; Kerala; Marine fisheries.*

The south western state of Kerala has long been considered a model on account of its achievement in health and education at relatively lower levels of income. During the pandemic, the state achieved global attention in the handling of the pandemic (*Menon et al., 2020*). While there was universal acceptance on the role of the government in providing and maintain health, the idea of health itself was widened to include aspects of well-being and the role of the community including neighbourhood groups were prominent in the state (*Ambekar et al, 2021*). Thus, one could say that health and health care provision underwent vital shift. As public health broadened to include aspects of well-being, there was a greater need to bring in communities and their perspectives as providers and facilitators of health, rather than as recipient of health services alone. In this aspect of constructing a novel approach to health provision, we believe our study based on the impact of covid on the marine fisheries sector proves to be particularly illuminating. We explore the various coping strategies in health (Institutional, Economic and Social) as well as sources that provided institutional, social and economic health strategies-whether it be the government, community, or self/family. Further, we try to find if socio-demographic factors influence the choices of the individual. While the pandemic has re-iterated the fact that there needs to be universal scale of resistance as there exist both collective risk and collective responsibility to tackle the crises, we need to understand individual factors that influence our choices. In this aspect, we need to

conduct community specific studies especially among vulnerable communities so that one can be equipped to deal with the crises in the best manner possible. Secondly, if we are focussed on equity-based recovery, then communities need to be centred as the agents of change rather than relying heavily on the state alone. Through this exploratory study, we try to explore the underlying reasons why a community relies on sources to meet various health needs and what this means for broader health education.

METHODOLOGY

The data was collected using a structured questionnaire. Health was one of the major components focussed on and for the paper 175 respondents comprised of labourers, boat owners, traders and workers at the processing plants across an urban and rural coastal district in Kerala, India were surveyed. Specific attention was paid to ensure that representation across gender, class and religion were reflected in the sample taken for the study.

In addition to socio-demographic details, strategies within health to cope during the pandemic were classified into Institutional, Economic and Social. The *Institutional* coping mechanisms were- 1) Access to vaccine, 2) Access to information through media; coping strategies in the *Economic* domain were- 1) Meeting health expenditure, 2) Access to Insurance. The S*ocial* domain strategies were- 1) Practice of Hygiene and 2) Following COVID protocols. For each of the six strategies adopted, the respondent was further probed on who aided in meeting the health specific needs during the pandemic. The sources were comprised on Government, the community, Employer or Self/Family/Friends. Following the data collection, a stakeholder workshop was held at Kochi, Kerala in order to discuss and deliberate on the findings from the survey. Thus, the paper follows a mixed methods approach combining the quantitative results obtained from the survey with the themes drawn from the group discussion during the workshop. For the paper, quantitative approach was used to understand how the community was able to not only withstand the pandemic but also on what insights may be gained as to how the community leveraged available social capital and networks. We argue that this could have potential impact on how public health is conceived by the people and who are the main actors in the arena of public health. As we understand what factors influence the choice of strategy and the source of coping mechanism, informed policy decisions can be taken that can substantially improve the preparedness of the community to face future shocks including pandemic.

Structured questionnaire: The questionnaire consisted of seven sections comprising socio-demographic details, economic position, incidence of covid, and employment details across three time periods- Pre –Covid, during Covid and Post Covid- coping domains and major sources of coping mechanisms as well as Lessons for future. Data collection took place between June and December 2022 and the stakeholder workshop was held in February 2023. The 175 respondents were selected using stratified sampling across the different stakeholders in the sector, In addition to the survey respondents, local self-government representatives, research community members, civil society members were contacted

Descriptive analysis was undertaken on categorical data (Gender, Education, Age, Income and prevalence of co-morbidities) and presented in percentages in Table 1. A chi-square test for association was used to determine the association between sources of coping strategies and the socio-demographic characteristics of participants. Analyses were conducted using SPSS and values of $p<0.05$ were considered as significant. After accounting for statistical association using the Chi-square test, during the stakeholder workshop, the relations were probed further to understand the causal mechanisms through which the socio-demographic variables influence the choice of coping strategies.

Socio-demographic characteristics of survey participants : Socio-demographic factors have been considered as important determinants affecting adoption of behaviour (*Udoh et al., 2016*) and the paper tries to identify the influence of the same on choosing health strategies. The sample population comprised 126 male and 49 female participants. The composition of the participants was; Labourers (60), Boat owners (45), Traders including wholesale and retail (50), and marketing functionaries (20). More than half of the survey participants (51.43%, n=90) were aged above 50 years, with the majority with an education level of completed secondary schooling (45.72%, n=80). Fifty-six percent of the respondents reported the existence of co-morbidities and as we shall see later, this influenced their source of coping strategy (Table 1). Further, more than half of the survey respondents (56%, n=98)

Table 1. Socio-economic profile of respondents (N= 175)

Demographic factors	No. (%)
Gender	
Male	126(72)
Female	49(28)
Education	
Illiterate	11(6.29)
Primary schooling	66(37.72)
Secondary schooling	80(45.72)
Graduate or above	18(10.29)
Age	
Less than 35	13(7.43)
B/t 35-50	72(41.14)
Above 50	90(51.43)
Income	
Less than Rs 20,000	75(42.86)
B/t Rs 20,000-Rs 40,000	95(54.29)
More than Rs 40,000	5(2.86)
*Co-morbidities**	
Yes	98(56)
No	77(44)

Source: Survey statistics. Figures in parenthesis represent percent
*Diabetes, Hypertension, Heart disease, Cancer and Kidney disease.

reported that their entry into fishing was due to birth, and only 24 per cent (n=42) reported having *ever* moved out of fishing (This included moving out during the Covid period) 54.29%, (n=95) of participants reported a monthly income between INR 20,000. The majority of participants (64.57%, n=113) reported either having contacted COVID-19 themselves or a family member with reported incidence. Of those, 46.02% (n=52) of the participants reported that they continued to suffer from after-effects due to COVID-19.

RESULTS AND DISCUSSION

Institutional factors influencing source of coping strategy : Access to vaccines and the information was considered universally to be the duty of the state but there were important mediating factors that determined access. When speaking about health, both tangible and intangible factors were considered factors as relevant. The inclusion of health services including vaccine rollout, there was a crucial role was also played by information about the disease and its causes and prevention. In India, especially, there was a particular focus on the Union and particularly state health ministry in Kerala provided regular updates regarding the situation (*Gauttam et al.*, 2021). This ranged from the number of cases being reported daily to knowing when the transport services would resume. It is interesting to note that the role of information was considered more crucial than ever, in not only enforcing the health guidelines but rather also in order to facilitate that misinformation was curtailed to the best extent possible. Clear and direct communication figured as an institutional mechanism during the pandemic to cope given the uncertainty and associated stress and anxiety. This has been witnessed in the study reported by *Mohapatra et al, (2016)* in the context of floods and cyclones in Orissa. The positive perception of the government in Kerala was based on pre-crisis communication, effectively signalling resolution with 'steal the thunder' by being the first to receive the bad news strategies in a systematic manner at regular intervals *(Ataguba and Ataguba, 2020*). Given that every crisis has a cycle with varying emotional reactions and needs, displaying bounded optimism and deliberate calm helps in management. Similarly, if we look at the level of co-morbidities present, clearly those with the presence of any kind of co-morbidity preferred to receive information from the Government and Community. One could say that both health and information were understood more clearly than ever as being 'public' good in the sense that it was important to be inclusive and equitable in its provision and usage. This meant that given the scale of operations- it was difficult or even impossible to exclude any person from accessing or subsequently reduce what was available for each person. The provision was undertaken universally by the public sector or the state. During the pandemic, the state transformed into what Mariana Mazzucato termed an 'entrepreneurial state' as a result of which several 'externalities' developed.

The provision of telemedicine and the widespread use of social media in creative way to create awareness among the people was particularly noteworthy. The usage of digital devices for service delivery was either initiated or even improved significantly during the COVID period and while access to services including the digital divide is yet again a cause for concern, the desire to learn new technologies and skills persisted. In India, for example, the Ministry of Health and Family Welfare launched the revamped 'e-Sanjeevani OPD-Stay at home portal to reduce COVID-19 infections among patients as well as health workers. In Kerala in particular, the idea of health and diseases requires specific attention. This is due to not only demographic factors such as an increasingly ageing population but additionally due to the fact that there have been greater

Table 2. Institutional factors influencing source of coping strategy

Demographic factors	Source of coping strategy: Institutional				
	Government	Community	Employer	Self	*p value-*
*Gender**					
Male	111(79.29)	20(14.29))	8(5.71)	1(0.71)	*0.0000*
Female	10(28.57)	4(11.43)	15(42.86)	6(17.13)	
*Education**	8(72.72)	2(18.18)	0	1(9.09)	
Illiterate	29(43.94)	10(15.15)	10(15.15)	17(25.76)	
Primary schooling	43(58.11)	0	15(20.26)	16(21.62)	*0.0039*
Secondary schooling	8(33.33)	5(20.83)	5(20.83)	6(25)	
Graduate or above	8(72.72)	2(18.18)	0	1(9.09)	
*Age**					
Less than 35	10(76.92)	1(7.69)	1(7.69)	1(7.69)	*0.0000*
B/t 35-50	55(76.39)	7(9.21)	8(10.53)	2(2.63)	
Above 50	35(38.89)	15(16.67)	20(22.22)	20(22.22)	
*Income**					
Less than Rs 20,000	58(77.33)	2(2.67)	10(13.33)	5(6.67)	*0.0000*
B/t Rs 20,000-Rs 40,000	91(95.79)	2(2.12)	1(1.05)	1(1.05)	
More than Rs 40,000	1(20)	1(20)	1(20)	2(40)	
*Co-morbidities***					
Yes	45(45.92)	33(33.67)	18(18.37)	2(2.04)	*0.0000*
No	23(29.87)	43(55.84)	10(12.99)	1(1.30)	

*Significant at 5% level of siginificance.
**diabetes, hypertension, Heart disease, cancer and kidney disease

risk factors associated with the population such as hypertension *(Prajitha et al., 2021)*.

However, it must be noted that while the fisher community reports an outlier status w.r.t health in terms of life expectancy, there has been lower incidence of risk factors *(Salim et al, 2013)*. But it must also be cautioned that the study noted work related stress which could be a potential risk factor as far as health is concerned. In accessing the institutional strategies, statistical analyses based on Chi-square indicates that there was difference across gender, education, age and income (Table 2). In addition to differing sources of coping strategies, there were also subtle differences in how the idea of health itself was conceived by the participants. For example, during the workshop, women seemed to be focused on health as not mere absence of disease but rather about access and recovery *(Das et al., 2020*). The aspect of disease/vaccination was considered as important duty and the primary health care facilities seemed to be the automatic choice. However, there was also the mention of people beyond institutions whose help was considered as being crucial. As far as information was considered the knowing "*through each other*" signified the existence of social networks through which information was transferred (*Ali and George, 2019*). The broadening of the idea of health to include well-being, making it more context and location specific. In this specific context, there was a crucial role played by gender. Women also seemed to focus on who would be available in times of crises. Crises then was viewed not as entirely new phenomenon, there was possibilities of recurrence. Men, on the other hand, linked the electoral duty of the government (*"this is what governments are elected for")* to provision of health. Further given the scale and severity of operations, an alternate seemed inconceivable (*"If not the government, then who else"*). Across different education levels, it was seen that reliance on state was greater at lowest and highest levels of education and this shifted to either the community or the employer for those whose education was in between these two categories. At lower levels of income, greater reliance was placed on government and this shifted to employers at higher levels of income. For respondents with co-morbidities, reliance was again placed on government, community, and employer and this showed a marginal shift towards community for those without any co-morbidities.

Economic factors influencing source of coping strategy: Table 3 reveals that during COVID-19, in addition to income, education, gender and the presence

of co-morbidities determined the source of coping strategy- economic but the influence of age was negligible. Women tended to rely on self/ themselves rather than the community or employer to meet the economic aspects of health, while men relied upon the community (35.1) in addition to themselves (*Minimol and Makesh, 2012*). Government support especially in terms of the Public Distribution System was considered crucial to meet household expenditure, however, the direct role of government in meeting medical expenses was not considered as crucial. At the household level, conspicuous consumption was curtailed with greater reliance placed on avoiding being sick by paying greater attention to diets. Closer attention was paid to not just having diets that were healthy, as well as to source materials that guaranteed safety. It has been noted that for example, as far as the fish consumers were concerned, the reliance on known sources often meant increased intake of inland fish species as opposed to marine fish species sourced from unknown suppliers. This also extended to other measures of self-sufficiency such as the initiation of homestead gardening and farms to grow own food. In addition to PDS, respondents also mentioned how the initiative of community kitchens for example helped bring a sense of solidarity in addition to saving expenses.

As health care was provided mainly by the public sector, it was also a re-iteration of the state's duty towards the citizens. Gender, education and income all played important roles in mediating the source of coping strategy. However, age was considered as being less impacted by source of coping strategy. During the workshop, majority of the participants pointed out that while government was active and functioning during covid, more assistance was required in order to deal with the after effects of covid, when complications due to long form covid often meant fewer working days and subsequently lower incomes. This has been re-iterated in the case of other primary sectors such as agriculture (*Divya and Nirmaladevi 2022: Raman et al, 2021 and Rohit et al, 2023)*. Additionally, several medical services were halted during COVID-19 (including dialysis and chemotherapy), and while these were resumed in a phased manner, during the initial stages, it was worrying for the patients to approach hospitals even for severe diseases. Across gender, women tended to place importance on self alone and none seemed to rely on community or even employer, while men tended to rely on community, employer as well as on self. During the workshop, women reported that their own past savings were important factor that contributed to meeting the health expenditure. In this aspect, their

Table 3. Economic factors influencing source of coping strategy

Demographic factors	Source of coping strategy: Economic			
	Community	Employer	Self	p-value
Gender				
Male	50(35.71)	8(5.71)	82(58.57)	-0.00
Female	0	0	35(100)	
Education				
Illiterate				
Primary schooling	9(81.81)	1(9.09)	1(9.09)	0.00
Secondary schooling	7(10.60)	35(53.03)	24(36.36)	
Graduate or above	30(37.5)	27(33.75)	23(28.75)	
Age				
Less than 35	1(7.69)	1(7.69)	11(84.62)	0.26
B/t 35-	7(9.72)	8(11.11)	57(79.17)	
Above 50	11(12.22))	20(22.2)	59(65.56)	
Income				
Less than Rs 20,000	50(56.67)	5(6.67)	20(26.67)	0.00
B/t 20,000-40,000	10(10.42)	46(47.92)	40(41.67)	
More than 40,000	3(75)	1(25)	0	
*Co-morbidities***				
Yes	45(45.92)	23(23.47)	28(28.57)	0.00
No	17(22.08)	38(49.35)	11(14.29)	

* Significant at 5% level

**Diabetes, Hypertension, Heart disease, Cancer and Kidney disease

Table 4. Social factors influencing source of coping strategy

Demographic factors	Source of coping strategy: Social			
	Community	Government	Self	p-value
Gender				
Male	100(71.43)	34(24.29)	6(4.29)	-0.00
Female	20(57.10)	2(5.71)	13(37.14)	
Education				
Illiterate	8(72.73)	1(9.09)	2(18.18)	
Primary schooling	56(84.85)	4(6.06)	6(9.09)	0.00
Secondary schooling	67(83.72)	6(7.50)	7(8.75)	
Graduate or above	4(22.22)	8(44.44)	6(33.33)	
Age				
Less than 35	1(7.69)	1(7.69)	11(84.62)	0.00
B/t 35-50	7(9.72)	8(11.11)	57(79.17)	
Above 50	50(55.55)	20(22.22)	20(22.22)	
Income				
Less than Rs 20,000	68(90.7)	2(2.67)	5(6.67)	0.07
B/t 20,000-40,000	75(78.125)	11(11.46)	10(10.42)	
More than 40,000	2(50)	1(25)	1(25)	
*Co-morbidities***				
Yes	60(61.22)	27(27.55)	11(11.22)	0.01
No	20(25.97)	50(64.93)	7(9.09)	

*Significant at 5% level

**Diabetes, Hypertension, Heart disease, Cancer and Kidney disease

experience in dealing with self -help groups and other credit groups were instrumental in realizing the importance of savings no matter the amount. Across education levels, reliance on community declined and this was shifted towards employers and reliance on including family and relatives to meet the economic needs relating to health.

Another important aspect of improving well-being was how consumption was geared towards local resources. In this aspect, governments (as well as households) tended to prioritize their spending on matters of strategic importance. At the national level, the health schemes were revamped under the Poshan Abhiyan 2.0 and an allocation of Rs 6,000 crores was made in the Union Budget for Health and Nutrition (*Jain et al, 2022*). When it comes to health expenditure, India as well as Kerala reports a larger share of out-of-pocket expenditure and as far as health is considered, it was also worrisome that health expenditure could substantially increase in a situation with lower levels of employment/income. This made it all the more worrisome that there were fewer services such as insurance and social security in order to meet these unexpected shocks.

As far the fishing community is concerned, economic factors such as production have been the focus on the government – whether national or state. In this aspect, several states relaxed restrictions to engage in fishing following the national lockdown in March 2020. Here, it was also the demand of the fisher community that their activity be considered as an essential activity given not just considering fish as food, but also the contribution of fisheries to employment and income generation, similar to the role recognized by agriculture. This meant that schemes such as Pradhan Mantri Matsya Sampada Yojana similar to the PM KISAN needed to strengthen financial support directly to the fishers (*Amitha and Karthikeyan, 2022*). Given that the monsoon bans or the trawling ban on fishing was in force during May-June, and the labour-intensive nature (not to mention, the migrant labourers involved) it was especially crucial that the government understood the seasonal nature of fishing while announcing the restrictions related to work.

Social factors influencing source of coping strategy : As far as the social coping strategies were concerned, differences were pronounced across gender, education, age, and presence of co-morbidities but no significant difference across income levels and the source of coping strategy (Table 4). As far as gender was concerned, men tended to regard the social strategies concerning health as more of a ‘law and order situation, and consequently, men tended to rely on government

(24.29) and community (71.43) more than women (5.71), and (57.10) respectively. As differences in gender and education, translated to changes in work patterns including travel, there were different degrees of enforcement of the covid protocols. However, for women who were employed either as vendors or in peeling sheds as labourers, the community was more central to maintaining the health of everyone. This could very well be due to the difference between the nature of work done between men and women as the former tended to work outside of the home while the latter worked at places nearer to homes often involving lesser distance travelled.

With an increase in age, greater reliance was placed on the community and government rather than on the self (*Rajan et al., 2020*). This is crucial for an aging society such as Kerala. It was also seen that social networks often extended to mediating between the government and the households. In this aspect, the role played by the Community Health Worker, or the ASHA was crucial. ASHA were the female frontline workers ensuring information and services to the households. Therefore, in looking at the extension services offered whether it be in the case of agriculture or fisheries, the domain of public health may be considered. During COVID-19, much of the activities on enquiring after people affected with COVID-19 monitoring their condition especially when quarantined were performed by ASHAs. One of the workshop respondents noted that there was provision for health workers such as herself to mediate to persuade the patients or those quarantined because they were well known to her.

While tensions were certainly unavoidable, it was certainly easier to persuade your neighbours to follow the rules related to quarantine and the lockdown. One could argue in this context that the social location of the ASHA between the community and the health department was convenient and certainly accelerated the adherence to the COVID protocols implemented. While health was certainly a priority, it was also seen as important as how services of waste management and pollution control were seen as central to the idea of public health. These translated to developing public policies that were more closely attuned to the spirit of sustainable development. Thus, one could say that there was consideration at the governance level as to what constitutes public health.

CONCLUSION

Participants of the survey and workshop described how important the community had been during the pandemic in accessing and utilising health services and in meeting urgent needs. The community often meant the larger neighbourhood with emphasis on the local self-government representatives and the workers association playing important roles. More in-depth studies are required to understand how community may be meaningfully integrated to public health discourse with sufficient public investment. In doing so, the idea of 'health' can be broadened from family as the basic unit to include the larger community fostering stronger solidarity and bonding making health truly public. Further, we can identify how to best integrate community action to achieve social justice goals whether it be for public health or food security (*Mridula and Alex 2011*). The framework of sustainable development goals provides us with a feasible framework to foster a better understanding of the idea of health and community. SDG mentions the aspect of health for all including our environment and SDG mentions fostering partnerships among institutions and communities. We believe that the fisher community's experience during the pandemic can provide a blueprint for understanding how we widen the definition of health as well as community. By doing so, not only do we comprehend a wider sense of health but also of communities like the fisher community who are usually considered outliers or lacking in aspects of health and education even in state such as Kerala where the general levels of health and education are better compared to the rest of the country.

In this aspect, not only is there a broadening of the understanding of public health particularly the multi-disciplinary aspect of health and well-being, it is important that in doing so we consider the providers of health as beyond the medical community. By this, it should not be considered as there is a need to renounce modern medicines but rather that we become more conscious and cautious in how we tend to overlook stigma and discrimination within health care. While this has been receiving attention globally, in the Indian context, it is important that we do not fall into the position of describing and scribing communities on the basis of lack and deficiencies. The covid pandemic was (and continues to be) an experience through which we recognise that we must learn to co-exist and much like poverty, a "Public health scare anywhere is a threat to people everywhere"

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CONFLICT OF INTEREST

The authors have no conflicts of interest.

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