COMPREHENSIVE RESEARCH IN EMERGING TECHNOLOGIES
https://choicemade.in/cret/ Volume 2 issue 1

A Short Report on Participatory Study to Reduce Suicide and DSH Caused by Pesticides in Sundarban, India

Jayesh Malviya[1], Samit Dubey [2]

[1]*Research Scholar, Department of Pharmacy, RKDF, Bhopal*
[2]*Assistant professor, Department of Pharmacy, RKDF, Bhopal*

Abstract: In the Sundarban region of India, deliberate self-harm (DSH) poses a significant public health concern. To address this issue, a community-based participatory research (CBPR) approach was employed to create a program aimed at preventing suicide and DSH. This initiative involved organizing facilitated focus group discussions to collect input and insights from community members regarding pesticide-related DSH and suicide in the Namkhana block of the Sundarban region. In response to the community's recommendations, a comprehensive prevention program was launched. This program included the development of culturally sensitive and informative Information, Education, and Communication (IEC) materials, as well as training modules for various stakeholders in the Namkhana block. The majority of the target groups found these IEC materials to be valuable. Following the implementation of the CBPR prevention program, there was a notable reduction in DSH admissions at the Dwariknagar Block Primary Health Center (BPHC). This positive outcome suggests that implementing a similar strategy in other blocks within the Sundarban region or in agricultural communities could help mitigate the high morbidity and mortality rates associated with pesticide-related DSH and suicide.

I. Introduction

In the Sundarban region of West Bengal, deliberate self-harm (DSH) is a significant public health concern, as evidenced by multiple studies [1][2][3]. Nonfatal DSH, also referred to as nonsuicidal self-injury, has an annual incidence rate ranging from 700 to 1,100 per 100,000 individuals, with a lifetime prevalence rate spanning from 720 to 5,930 per 100,000 individuals [3]. It's noteworthy that nonfatal DSH occurs at a rate ten times higher than suicide [4]. India grapples with a substantial suicide problem, with an estimated 100,000 suicides occurring annually, constituting approximately 10% of the world's suicides [5]. Suicide ranks among the top 10 causes of death in India and is a significant contributor to mortality among individuals aged 16 to 35 [6]. Numerous studies conducted in India, as referenced in [7-11], have explored the relationship between suicidal behavior and societal and environmental factors, underscoring the necessity for psychosocial interventions within society to address deliberate self-harm (DSH). Suicidal deaths are preventable, and timely interventions can substantially reduce DSH incidence. Recent suicide prevention programs have prioritized intervention as a key public health initiative. The Sundarban region, situated in the southern coastal area of West Bengal, is renowned as the world's largest delta. This region encompasses 19 community development blocks, each with a primary health center (BPHC) serving as the primary clinical facility. Encompassing an area of 1,630 square miles, it comprises 54 islands safeguarded by an extensive 3,500 km man-made embankment. With 88.5% of its population reliant on fishing and agriculture, the human development index stands at 0.55, below the district's average of 0.62. The region contends with numerous psychosocial community stressors, including poverty, gender discrimination, domestic violence, natural disasters, and climate change. To address this issue, a two-year retrospective study covering 2000-01, followed by a four-year prospective study spanning 2002-05, were conducted as part of an ongoing community mental health services initiative. These studies focused on patients with DSH admitted to the Dwariknagar BPHC within the Namkhana block. The objective was to assess the perceptions and opinions of the community, including farmers and Gram Panchayat members, regarding the causes and potential solutions to prevent DSH suicides in the region. Employing a community-based participatory research (CBPR) approach, the insights gleaned from these studies were utilized to develop a community action plan that includes training materials and Information, Education, and Communication (IEC) resources aimed at preventing DSH-suicide.

II. Materials and Methods

Ethical Approval

Ethical affirmations. The Ethics Committee of the Ministry of Health and Family Welfare, Government of West Bengal and the Panchayat Samithi, Namkana Block, South 24 Parganas, approved the study protocol.

Area of Study

Namkhana is an island located on the Bay of Bengal, situated in the southernmost part of the eastern Sundarban region. According to the 2001 census, Namkhana had a population of 160,627 and is divided into seven Gram Panchayats. Agriculture serves as the primary source of livelihood for the majority of the population, with 80% of residents engaged in farming. Fishing is the second most common occupation, employing 15% of the population, while the remaining 5% are involved in various other services, including teaching. The island is equipped with one primary health center located at Dwariknagar and four primary health centers named Narayanpur, Maisani, Haripur, and Frazerganj, situated from north to south. The community is served by various health personnel, both government and non-government, who provide essential healthcare services.

Focus group discussions that are facilitated

The study encompassed a series of facilitated focus group discussions (FGDs) involving various segments of the population residing in the Sundarban area. These groups included Panchayat members, farmers, students, healthcare personnel, school teachers, as well as members of non-governmental organizations (NGOs) and women's activist groups. However, for the purposes of this report, we are presenting data exclusively related to farmers and Panchayat members.

During these FGDs, a total of 140 farmers (20 from each Gram Panchayat, selected by their respective heads), 124 Gram Panchayat members (representing all seven Gram Panchayats), and 23 Panchayat Samity members were interviewed. The discussions were meticulously planned and scheduled for specific dates and locations, with the central themes revolving around "pesticide-related deaths, self-harm, and prevention" within the block.

To guide the discussions, a brief questionnaire comprising six items was distributed to participants at the outset of each FGD. These FGD sessions typically lasted between 1.5 to 2 hours, during which participant responses were both recorded in writing and, with their consent, taped for subsequent analysis. Detailed results pertaining to key issues are provided in the results section.

III. Results

A. Farmers' Comments and Views

The study involved a total of 140 farmers who participated in 11 facilitated focus group discussions (FGDs). Among these farmers, a significant majority, approximately 76.7%, acknowledged that suicidal behavior associated with pesticide use represented a significant health concern. Notably, 53.3% of the farmers reported keeping pesticides within their homes, and of this group, 31.3% mentioned leaving these pesticides in an unsecured manner.

Regarding the timing of pesticide acquisition, the data indicated that in 73.3% of cases, farmers purchased insecticides just one week before their intended usage. Additionally, 53.3% of the farmers were unaware of the detrimental impact that pesticide use could have on the environment, while 36.7% lacked awareness of its potential harm to agriculture.

When it came to suggestions for preventing DSH-suicides on the island, there was a diversity of opinions among the farmers. Approximately 65.2% of them believed that public education should play a crucial role in addressing this issue, while 30.4% emphasized the importance of safely storing pesticides as a preventive measure.

B. Members of the Panchayat Samity's Comments and Views

During a focus group discussion held at the Samity office, it came to light that an overwhelming majority, comprising 98% of the members, had never engaged in discussions related to mental health within the Panchayat Samity. Furthermore, every single member, totaling 100%, expressed a strong belief in the necessity of mental health training for the Panchayat.

In terms of awareness, a substantial 86.7% of the members reported being cognizant of instances of deliberate self-harm (DSH) or suicide within their area, with 80.7% of them recognizing pesticide-related suicide as a significant health concern in the block.

A noteworthy 88% of the members held the shared perspective that both the Gram Panchayat and Panchayat Samity had pivotal roles to play in diminishing occurrences of pesticide-related self-harm and suicide. Moreover, an overwhelming 95% of these members emphasized the critical importance of raising public awareness regarding mental health.

According to information provided by the Samity, there are a total of 627 pesticide shops in the block, including retailers, but only a mere 4% of these establishments are licensed. This underscores the urgent need for more stringent regulations governing the sale of pesticides in the region.

C. Reactions and Views of Gram Panchayat Members

Based on the information provided, it is evident that Gram Panchayat members (GPMs) possess a high level of awareness concerning pesticide-related fatalities and suicides within their respective villages. The majority of GPMs recognize this as a critical health issue and believe that Gram Panchayats (GPs) have a significant role to play in the prevention of deliberate self-harm (DSH) and suicide.

To mitigate the adverse consequences of pesticide use, participants put forth several strategies. These proposals encompassed the organization of training sessions aimed at educating farmers about the safe application of pesticides, active involvement of the local agriculture department in this educational process, efforts to reduce incidents of domestic violence, and the enforcement of rigorous regulations governing the sale of pesticides. Moreover, a substantial number of Gram Panchayat members underscored the importance of empowering Gram Panchayats to regulate pesticide sales within their respective jurisdictions. These suggested strategies hold the promise of effectively addressing the issue of pesticide-related fatalities and self-harm.

Furthermore, the GPMs acknowledge the imperative need to provide their members and other segments of the community with mental health training, including DSH prevention. This demonstrates a proactive approach towards addressing mental health concerns and fostering overall well-being in their villages.

D. Community Intervention Plan

The plan encompasses the following strategic actions:

(a) Establishment of a community outreach program and a dedicated mental health clinic, with the aim of extending vital support and counseling services to individuals in need of mental health assistance.

(b) Development of a comprehensive set of Information, Education, and Communication (IEC) materials geared towards training and advocacy efforts. These materials will target various groups, including healthcare professionals, educators, students, farmers, Panchayat members, local healthcare providers (HCPs), and the general public.

(c) Design and implementation of specialized IEC materials focused on "pesticide safety" specifically tailored for Panchayat members. The goal is to promote safe practices in pesticide usage within the community.

(d) Provision of training to healthcare professionals in community psychosocial intervention strategies. Additionally, Panchayat members, healthcare providers (HCPs), members of non-governmental organizations,

and Integrated Child Development Services (ICDS) workers will receive training to equip them with the necessary skills to effectively intervene and provide support during mental health crises.

These strategic steps are designed to achieve several key objectives. They aim to raise awareness surrounding mental health and pesticide safety, establish a framework for providing support and counseling to those in need, and empower individuals with the skills required to effectively intervene and offer vital support during mental health emergencies. The endorsement of these initiatives by both farmers and Panchayat members reflects a shared commitment to addressing these critical issues and fostering the overall well-being of their community.

E. Conducting Trainings

Following a thorough consideration of the perspectives provided by farmers and Gram Panchayat members (GPMs), a comprehensive training initiative centered on the prevention of deliberate self-harm (DSH) and suicide was meticulously designed and successfully executed. This initiative encompassed tailored training modules and the development of Information, Education, and Communication (IEC) materials, carefully crafted to cater to diverse groups within the community. A total of 89 training sessions were carried out across the Namkhana block, with the primary focus on the following target groups:

(i) Farmers

(ii) Panchayat members

(iii) Health staff

(iv) Teachers

(v) Students

The implementation of this expansive training program signifies a proactive and concerted effort to address the pressing issue of DSH and suicide within the community. It underscores a resolute commitment to enhancing awareness levels, imparting knowledge regarding prevention strategies, and equipping individuals with the essential skills required for effective intervention and support during mental health crises. The inclusion of multiple target groups further underscores a holistic approach in tackling this critical issue, recognizing the imperative of collaborative endeavors to promote mental health and overall well-being within the community.

Table 1: Lists the training target audiences and related IEC modules.

Target Groups	**Specific Training Module**
Nursing staff	Management and monitoring of DSH
Medical officers	Prevention of DSH, care of poisoning, and mental health
Multifunctional health professionals and ICDS personnel	Detection of mental illness and home visits for monitoring, psychosocial intervention, and follow-up
Panchayat members (whole block)	Detection of mental disease, psychosocial treatment, prevention of DSH, and common mental illnesses

Local health care providers (HCPs—whole block)	Detection of mental disease, psychosocial treatment, prevention of DSH, and common mental illnesses
Local school teachers (secondary schools)	Detection of mental disease, psychosocial treatment, prevention of DSH, and common mental illnesses
Farmers	storing pesticides safely, using them correctly, using caution while selling them, and preventing DSH
Local NGO (9) members	storing pesticides safely, using them correctly, using caution while selling them, and preventing DSH
Pesticide shop owners in each GP	storing pesticides safely, using them correctly, using caution while selling them, and preventing DSH

Table 2: Primary IEC training materials

IEC Type	Title	Content	Target Groups
Booklet	Farmers are urged to use caution while using and storing insecticides.	Instances of improper use of pesticides in the community, as well as appropriate usage and storage practices	Farmers, Panchayat
Folder	Safety precautions when using pesticides	risks of excessive pesticide usage, safety measures to take while using pesticides, and first aid for pesticide poisoning	Farmers, proprietors of P shops, and GP members
Coloured posters	Effects of pesticides on human health, food, and the environment; unintentional poisoning; DSH/suicide; domestic violence; alcoholism; promotion of mental health; and prevention of DSH	Farmers, P-shop owners, advertisements in all GPs and other conspicuous places	
Stickers	Slogans that are brief on DSH prevention, mental health promotion, and proper pesticide usage	public spaces, schools, panchayats, and the Mahila Samity headquarters display	

IV. Discussion

Participatory research (PR) entails a structured inquiry carried out in collaboration with individuals affected by the issue under investigation, with the primary objective of driving social change or informing actionable solutions [16]. A specific form of PR known as Participatory Action Research emphasizes the promotion of health and the reduction of health disparities by actively involving individuals in efforts to enhance their own well-being [17]. Self-harm behavior is increasingly recognized as a significant public health concern due to the substantial morbidity and mortality it inflicts and its association with personal and social factors [18].

Community-based intervention strategies hold significant promise in effectively preventing self-harm by fostering community engagement and improving health responses.

The program aimed at preventing deliberate self-harm (DSH) was developed through the application of Community-Based Participatory Research (CBPR) methods. This approach seeks to enhance the quality of life within the community and reduce suicidal behaviors by providing new knowledge to individuals in need of change. The selection of target audiences was based on community input and endorsement, resulting in the development of well-received Information, Education, and Communication (IEC) materials and training resources. These materials were enriched with content derived directly from the insights and comments shared by local residents during focus group discussions.

CBPR, as an approach, goes beyond treating community members as mere subjects of a research project. For instance, Multi-Purpose Health Workers (MPHWs) assumed shared responsibilities, such as monitoring instances of domestic violence during their routine house visits [19]. Healthcare professionals actively contribute to prevention efforts by identifying potential patients and referring them to mental health clinics. They also play a pivotal role in the prevention process by promptly reporting individuals who might require mental health support [20].

The findings concerning the prevalence of unlicensed pesticide shops are deeply concerning, underscoring the urgency of implementing stringent measures to restrict easy access to pesticides through retail outlets. Reports indicate that factors such as geographic isolation, economic hardships, and limited healthcare access in rural areas are associated with an increased risk of suicidal behaviors [21].

This unique initiative involving active participation from Panchayat and community members in DSH prevention activities within the Sundarban region represents a promising public health model for preventing self-harm in rural areas of developing nations. Successful strategies in this context have encompassed agricultural support, holistic community involvement, and the formulation of community-driven suicide prevention policies [23].

V. Conclusion

In summary, the participatory study conducted in Sundarban, India underscores the significant roles that both the Gram Panchayat and Panchayat Samity can play in mitigating instances of self-harm and suicide related to pesticide use. This study also emphasizes the crucial need to enhance public awareness regarding mental health and the safe handling of pesticides.

The findings of this study suggest potential solutions, such as implementing restrictions on pesticide sales and enforcing stricter regulations, especially concerning sales to minors. Additionally, the absence of structured educational programs aimed at instructing farmers on the safe and responsible use of pesticides emerges as a pressing concern that warrants immediate attention.

The practice of referring cases linked to family conflicts, including instances of domestic violence, to Panchayats for resolution serves as an example of how participatory approaches can effectively address complex societal issues. To conclude, the insights gathered from this study offer valuable guidance for the development of effective interventions aimed at reducing incidents of self-harm and suicide associated with pesticide use in the region.

References

[1] A. N. Chowdhury, D. Sanyal, S. K. Dutta, and M. G. Weiss, "Deliberate self-harm by ingestion of poisons on Sagar Island in the Sundarban Delta, India," International Medical Journal, vol. 10, no. 2, pp. 85–91, 2003.

[2] A. N. Chowdhury, S. Banerjee, A. Brahma, and M. K. Biswas, "Pesticide poisoning in nonfatal deliberate self-harm: a public health issue," Indian Journal of Psychiatry, vol. 49, pp. 117–120, 2007.

[3] S. S. Welch, "A review of the literature on the epidemiology of parasuicide in the general population," Psychiatric Services, vol. 52, no. 3, pp. 368–375, 2001.

[4] J. M. Bertolote and A. Fleischmann, "A global perspective in the epidemiology of suicide," Suicidology, vol. 7, pp. 6–8, 2002.

[5] L. Vijaykumar, "Suicide prevention: the urgent need in developing countries," World Psychiatry, vol. 3, pp. 158–159, 2004.

[6] National Crime Records Bureau, Accidental deaths and suicides in India. New Delhi: Ministry of Home Affairs, Government of India, 2009, http://www.indiastat.com/.

[7] K. S. Latha, S. M. Bhat, and P. D'Souza, "Suicide attempters in a general hospital unit in India: their socio-demographic and clinical profile. Emphasis on cross-cultural aspects," Acta Psychiatrica Scandinavica, vol. 94, no. 1, pp. 26–30, 1996.

[8] B. L. Narang, B. P. Mishra, and N. Mohan, "Attempted suicide in Ludhiana," Indian Journal of Psychiatry, vol. 42, pp. 83–87, 2000.

[9] S. Singh, A. Gupta, S. Sharma, A. Sud, A. Wanchu, and P. Bambery, "Non-fatal ethylene dibromide ingestion," Human and Experimental Toxicology, vol. 19, no. 2, pp. 152–153, 2000.

[10] P. N. Suresh Kumar, "Age and gender related analysis of psychosocial factors in attempted suicide," Indian Journal of Psychiatry, vol. 40, pp. 338–345, 1998.10

[11] P. D. Bansal and R. Barman, "Psychiatric morbidity and the socio-demographic determinants of deliberate self harm," Journal of Clinical and Diagnostic Research, vol. 5, no. 3, pp. 601–604, 2011.

[12] A. N. Chowdhury and M. G. Weiss, "Eco-stress and mental health in Sundarban Delta, India," in The Dying Earth: People's Action and Nature's reaction, M. Desai and M. K. Raha, Eds., pp. 108–119, acb Publications with Netaji Institute for Asian Studies, Kolkata, India, 2004.

[13] A. N. Chowdhury, S. Banerjee, A. Brahma, and M. G. Weiss, "Pesticide practices and suicide among farmers of the Sundarban region in India," Food and Nutrition Bulletin, vol. 28, supplement 2, pp. S381–S391, 2007.

[14] A. N. Chowdhury, A. Brahma, and S. Banerjee, "How to operationalise community mental health service at the primary care? Experience of IRMC model from Sundarban, India," International Medical Journal, vol. 11, no. 2, pp. 105–110, 2004.

[15] A. N. Chowdhury, P. Sarkar, S. Das, T. Maity, A. Brahma, and S.Banerjee, "An ethnographic study of health system at Maisani Island: role of HCPs," Journal of Indian Anthropological Society, vol. 42, pp. 165–176, 2008.

[16] L.W. Green, M. A. George, and M. Daniel, Study of Participatory Research in Health Promotion: Review and Recommendations For the Development of Participatory Research in Health Promotion in Canada, Royal Society of Canada, Vancouver, Canada, 1995.

[17] F. Baum, C. MacDougall, and D. Smith, "Participatory action research," Journal of Epidemiology and Community Health, vol. 60, no. 10, pp. 854–857, 2006.

[18] A. N. Chowdhury, A. Brahma, S. Banerjee, and M. K. Biswas, "Pattern of domestic violence amongst non-fatal deliberate selfharm attempters: a study from primary care of West Bengal," Indian Journal of Psychiatry, vol. 51, no. 2, pp. 96–100, 2009.

[19] A. N. Chowdhury, "Culture and suicide," Journal of Indian Anthropological Society, vol. 37, pp. 175–185, 2002.

[20] A. N. Chowdhury, A. Brahma, S. Banerjee, and M. K. Biswas, "Community mental health service by IRMC model involving Multi-Purpose Health Workers in Sundarban, India," International Medical Journal, vol. 13, no. 3, pp. 185–190, 2006.

[21] J. K. Hirsch, "A review of the literature on rural suicide: risk and protective factors, incidence, and prevention," Crisis, vol. 27, no. 4, pp. 189–199, 2006.

[22] J. Allen, G. Mohatt, C. C. T. Fok, D. Henry, and People Awakening Team, "Suicide prevention as a community development process: understanding circumpolar youth suicide prevention through community level outcomes," International Journal of Circumpolar Health, vol. 68, no. 3, pp. 274–291, 2009.

[23] S. Banerjee, A. N. Chowdhury, E. Schelling, A. Brahma, M. K. Biswas, and M. G. Weiss, "Deliberate self-harm and suicide by pesticide ingestion in the Sundarban region, India," Tropical Medicine and International Health, vol. 14, no. 2, pp. 213–219, 2009.