

Research Article

Evidence – Informed Policy Formulation and Implementation: A Case Study of 'Clean Air Policy' in Punjab, Pakistan

Saira Tariq,¹ Rubeena Zakir²

^{1,2}Department of Public Health, Institute of Social and Cultural Studies, University of the Punjab, Lahore, Pakistan.

Abstract

Background: There has been an accelerating momentum globally, for the use of scientific research evidence to support public health policy formulation and implementation. Policymakers, nonetheless use a variety of information over and above research evidence in the process. A case study of 'the Clean Air policy' was undertaken to explore the Policy makers practices related to Evidence Informed Policy in Punjab, Pakistan.

Objective: The objective of this study was to investigate policy makers' perceptions regarding 'evidence' and how it is gathered and used in policy formulation and implementation processes

Methods: The empirical data were collected by qualitative research techniques. Document review and semi-structured in-depth interviews were conducted with 87 purposively selected policymakers between December'22-October'23. Data Analysis was guided by principals of grounded theory. A conceptual model for Evidence Informed Policy Formulation and Implementation (derived from the Frameworks of Bowen and Zwi and Dodson et al.) was experientially applied to organize the data.

Results: The case study of the 'Clean Air Policy' of the Govt. of Punjab highlighted that the policy had been formulated in a structured manner with incorporation of relevant evidence (research and other) at all stages of policy formulation. Policy makers considered 'evidence' as an expansive concept not limited to research evidence. Overall, the use of evidence for policy-making and implementation is rooted in complexities inherent to the local context, policymakers understanding and organizational culture and processes.

Conclusion: The study contributed to understanding the arena of Evidence Informed policy practices in Pakistan. Addressing the highlighted challenges can inform strategies for enhancing evidence use in policy processes for improving health system performance.

Corresponding Author | Dr. Saira Tariq, Ph.D Scholar, Department of Public Health, Institute of Social and Cultural Studies, University of the Punjab, Lahore, Pakistan. **Email:** drsairatariq@gmail.com

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Introduction

Health systems worldwide are confronted with manifold challenges like increasing burden of non-

communicable diseases, climate change and the unfolding of unfamiliar epidemics. It is understood that accosting these challenges will require concerted efforts to ensure that services reach the most vulnerable segments of the population. Meeting these challenges will also depend on well-designed, novel policies and health system reforms with a shift from curative to preventive services that are tuned into contextualized and cutting edge evidence. The World Health Organization (WHO) points out at



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the disconnection between evidence generation and its use in policy-making as a key determinant of health inequity in LMICs (Lower Middle Income Countries) settings. The WHO Strategy on Health Policy and Systems Research (HPSR) “Changing Mind-sets” reinforces the importance of health research and advocates embedding it much more effectively in the domains of policy-making and implementation for improved decision-making to strengthen weak health systems.¹

‘Evidence’ normally refers to scientific output derived through objective research conducted in systematic empirical studies by academics.² Policymakers, have a wide ranging understanding of evidence and bank on stakeholders’ views, interests of constituencies and citizens, past policies, data and so on, apart from scientific research evidence. These other forms of evidence in their view, is timelier and more relevant while scientifically established facts often play only a negligible role in the policy process.^{3,4}

Evidence-Informed Policy making is defined as a pathway where decision making is grounded in the most relevant and applicable research evidence which is drawn upon in a systematized, clear and unambiguous manner.⁵ Public Health decision making has its inherent complexities and deals with many interdependent barriers and extraneous determinants outside the realm of the health sector. Though Evidence Informed Policy is considered an off shoot of Evidence Based Practice, it is dependent on the context, value system, political as well as social and economic factors in a setting.

Conceptual Framework for Evidence-Informed Policy Formulation and Implementation

The framework employed for the study has combined features of a framework for evidence informed policy making (Bowen & Zwi, 2005)⁶ and a framework for policy dissemination and implementation (Dodson et al, 2012)⁷ in order to encapsulate the whole policy process. It portrays an adept explanation of the policy process consisting of Agenda Setting, Policy formulation, policy implementation and evaluation phases.⁸ The model involves and addresses the contextual background of the policies and considers the intertwined influence between research and other forms of evidence (Fig. 1). Bowen and Zwi proposed that the use of evidence involves functioning analysis and balancing of scientific knowledge in relation to other types of knowledge. The frame-

work’s core tenets are considered an analytic tool to assess the role evidence plays with respect to developing and implementing policy.

This study aims to investigate policy makers’ perceptions regarding ‘evidence’ and how it is gathered and used in policy formulation and implementation processes. It employs an in-depth case study of a public health policy in Punjab, namely ‘the clean air policy’ focusing on the policy making as well as implementation process while taking into account the complexities and political underpinnings of the same.

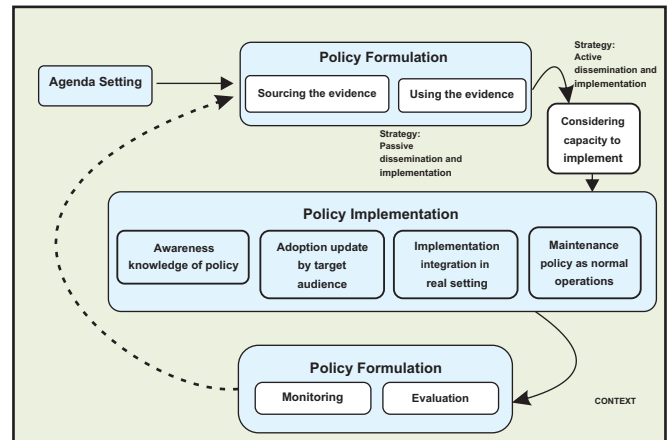


Figure 1: *Theoretical Framework for Evidence Informed Policy Formulation and Implementation. Developed from the Frameworks of Bowen and Zwi and Dodson et al*

Methods

The study is a part of PhD thesis.

Study Context: Pakistan is a lower Middle Income country with a distinctive policy context, in contrast to high income nations. The country underwent massive changes in its federal structure under the 18th Constitutional Amendment in 2010 (Devolution), whereby 17 federal subjects including Health and Environment were devolved to the provinces.⁹ Health policy making which had always been a highly centralized process at the federal level is now the mandate of Provincial Government Departments.

Study Setting: The study setting is the ‘Environment Protection Department’, Govt. of Punjab. The department is headed by a Minister and a Secretary who is responsible for formulation and implementation of Policies in sync with Pakistan’s national and international commitments.

Study Design

A Case Study approach was employed to conduct an in-depth analysis of a public health policy (Clean Air Policy) of the Government of Punjab. The foremost criteria for selection of the case study were its contemporary frame, wide ranging scope and public health impact and ramifications. Purposive sampling and snowballing were used to identify decision-makers who were responsible for making decisions related to public health practice and policies. They included politicians, civil servants, heads of state agencies and programs operating at Provincial level etc. A semi structured interview/ Topic guide was adapted in this study for interviewing the respondents.¹⁰ The topic guide was pilot tested with two policy makers before its use in the study and changes were made based on comments received during the pilot test.

Data Collection

Policy document reviews and In depth interviews were the methods used for data collection. Over 100 semi structured interviews were planned with officials in the Health, Planning & Development (P&D), and Environment Departments, including politicians, bureaucrats, Government officials, policy advisors, NGO's, provincial and district health officials as well as researchers. The interviews focused on the policy formulation and implementation processes, approaches for evidence use and the actors included. Each interview lasted an average of 40 – 90 minutes. Data was collected using audio recorders and note-taking depending on participant consent. The lead investigator interpreted and transcribed the data. To ensure the accuracy of the translation, the researcher double-checked every interview transcript based on audiotapes.

Data Analysis

The qualitative data was analyzed manually as an ongoing and iterative process through data collection, translation and transcription. Following the principals of Grounded Theory, Thematic Content Analysis was carried out.¹¹ Initial (open) coding (carried out manually by the lead author and verified by co-PI to ensure data quality) was guided by the stated research objectives and later by additional concepts as they emerged and were then categorized into themes. Data saturation was reached and sampling terminated at 87 participants.

Data validity was assessed by triangulation of findings, peer debriefing and respondent validation.

Ethical Considerations

The Study protocol was reviewed and approved by the Advanced Studies and Research Board of The University of Punjab. The authors have strictly adhered to ethical guidelines for conducting public health research.

Results

1. Agenda Setting

1.1 Context

According to the most recent Global Burden of Disease study, air pollution is one of the top all age risk factors for death and disability-adjusted life years in Pakistan.¹² As per the World Bank estimates, disease burden ascribed to outdoor air pollution in Pakistan is approximately 22000 premature adult deaths and 163,432 disability adjusted life years (DALY's) lost annually.¹³ Punjab is the most densely populated province of Pakistan. Alongside most industrial urban centers, the provincial capital, Lahore, frequently features in the list of cities with the worst air quality in the world. The deteriorating air quality poses severe health risks due to high concentrations of air containing Particulate Matter 2.5 (PM 2.5) prolonged exposure to which is associated with cancer and cardiovascular events, asthma and bronchitis etc.

The Lahore High Court in response to the government tardiness and dire impact of smog on public health established a high level "Smog Commission" in the province in response to a lawsuit filed by Barrister Walid Iqbal vs. Federation of Pakistan in 2016. In light of the Commission's recommendations, the Punjab Government subsequently announced the first Smog Policy in 2017. The 'Smog Policy' 2017 was nonetheless considered inadequate to address the complexities of the subject matter.

2. Policy formulation

In light of the afore-mentioned contextual requirements, the clean air policy was framed by the Environment Protection Department, Government of Punjab in 2023.

2.1 Policy makers Perceptions regarding Use of Evi-

dence in Policy processes

Theme 1: Evidence: Quality, Relevance, Viability, Timeliness

The study respondents reported that Evidence Informed Policy making is related to ‘timely’ access and use of diverse sources of evidence for policy related decisions. A senior bureaucrat who had served as a departmental secretary explained:

“Policy making is a very complex task as there are a lot of interconnected issues that need to be taken into account. Multiple issues like political environment, timing, ground realities, stakeholders and resources involved are noted ...”

Policymakers underlined concerns with the quality and reliability of evidence, as research produced by academics is perceived to be not in line with policymakers’ priorities. They expressed that majority of researchers do not have clear understanding of policy implications of their research output. A minister of health admitted the varied influencing factors in the process including public opinion, political viability, resources, strategic fit and pressure from stakeholders. Few Policy makers acknowledged that in absence of quality and timely availability of evidence, they had to base decisions on intuition and their professional experience. A senior Health Policymaker in Punjab quoted:

“Most of the time, the research that is being produced by our researchers is of no use in policy making. What we require is operational management research for example which policy option for a certain issue will be most cost effective in the long run and will result in optimization of resources. We don’t have this kind of technical expertise here to conduct such relevant research.”

Theme 2: *Researcher skills and constraints*

Policymakers reported concerns that the majority of researchers lacked skills on costing models— including cost-effectiveness of competing interventions, which are crucial to policy decisions. There were issues related to timeliness and methodology of sharing relevant research findings. Scarce resources within institutions and human resource constraints along with financial pressures were other impediments to evidence use.

Theme 3: *Influence of Leaders/political context*

An important emerging theme in the data was the influence of ‘Leaders’ in the process. According to policy makers, there were competent and knowledgeable experts in the field but ultimately support and commitment from those who were influential was required for actualization of plans. The findings highlighted that air pollution being an emergent issue, gained a lot of traction as the issue was taken up by the High court of the province, subsequently the government (bureaucracy) had to come up with a state of the art, broad based policy, duly informed by current ‘evidence’ in record time.

2.2 Sourcing and using evidence

Theme 4: *Organizational Culture and Processes*

Contrary to majority of Policy makers’ perceptions regarding evidence use in the policy processes, the study findings revealed that a structured process was employed to access and apply evidence-based approaches, based on contemporary scientific literature and global best practices in the process of drafting the policy. The Lead author of the policy was a Deputy Secretary and a technical expert in the department and was committed to support evidence based policy making. Formal work on the policy was preceded by a preliminary desk review/ analysis of literature on the subject. Stakeholder consultations and expert group meetings sifted studies on high impact interventions.

The Punjab Government, requested the Higher Education Commission to offer grants for call for proposals from regional and international entities for studies on the issue as there was a dearth of quality (local) contextual available data. While a couple of studies were formally commissioned, a number of other studies were conducted as a result of this initiative.¹⁴ Policy recommendations were discussed with various stakeholders and consensus was evolved.

The sources of evidence used by the department in the policy formulation process included the Provincial Census Report of 2017, Smog Policy of 2017, original research articles, reports from Food and Agriculture Organization, the Urban Unit of Punjab etc.

Stakeholder Consultations (Smog Commission)

The study findings highlight that most stakeholders advocated meaningful intent in policy formulation process. Several wider stakeholder consultative sessions

were held with relevant government departments including (Transport, Agriculture, Industries, LDA, Labor and Energy, SUPARCO, PDMA, the Urban Unit, GCISC-MOCC), Academia (LUMS, UET, PU and GCU), Civil Society Organizations (Lahore Conservation Society, WWF Pakistan etc), Industrial Associations, International Organizations including The World Bank, Asian Development Bank etc. for incorporating their input and feedback in the draft policy.

An in-service official of the Environment department commented:

“This policy has gained considerable traction amongst policy makers, planners as well as the International donor community due to the robustness of the policy formulation process undertaken! Furthermore the issue is such that it affects the quality of life of everyone – the involvement of the industry which is an influential stakeholder in this issue has further galvanized the subject”

The “Clean Air Policy” was eventually approved by the provincial cabinet and the Punjab Environmental Protection Council in March 2023. The policy was provided technical support by the World Bank, which evolved as a major ally in the process.

3. Dissemination and Implementation

The policy was routinely disseminated by the Department of Environment by sharing with various govt. departments but an active dissemination strategy was not followed. One departmental official briefed:

“the donor agencies have been closely monitoring the policy formulation and implementation plans- its strong evidence base and wider stakeholder participation has garnered considerable interest in various agencies. UNRC along with the World Bank also wants to partake in the launch/ the dissemination process. We are still coordinating with the Chief Secretary’s’ office to allocate us a time.”

4. Policy implementation

4.1 Awareness

The policy process has been exhaustive with a mix of ‘top-down’ as well as ‘bottom-up’ operation between the provincial government department and non-government agencies. The awareness was created by stakeholder involvement at every juncture of the policy formulation

process in regular meetings among decision makers. The sub-system actors however, could not be interviewed due to multiple reasons.

4.2 Adoption

The policy has been officially adopted by the Government of Punjab since March 2023. There is wider stakeholder commitment from the provincial steering committee on clean air, Cabinet subcommittee under the convener-ship of Minister of Environment, Ministerial Committee on smog – all Major departments that have been involved in the process of formulation, with periodic meetings since December 2021.

4.3 Implementation:

The clean Air Policy was ratified not too long ago (less than six months) and is in the implementation phase. There is a well-planned implementation mechanism with a prescribed Action Plan in the policy document. Comprehensive financial arrangements have been pinpointed. The provincial Environment Department is responsible for coordinating the implementation process with assistance from myriad agencies. Historically the implementation process is understood as challenging as the overall culture in government (public sector) institutions was identified as being averse to change. Few respondents verbalized the need to overhaul the organizational decision-making culture towards greater use of evidence. A policy maker quoted:

“We can come up with wonderful policies, the real issue lies in execution of these policies to bring about desired change. We are constrained by our service rules and umpteen issues related to Public Service. We can deliver only if we have support to amend these rules if required, build capacity of our workforce and then decentralize”

Another policy maker quoted:

“The situation has changed now - there’s a lot of momentum around policy processes to be informed by local evidence. Recently most policies are being made by technocrats or consultants who take into account situation analysis and such activities during formulating policies- hence, the policies are made well, at least! The difficult part for us is implementation where we have serious capacity issues and challenges as well as governance related issues that would perhaps take decades to improve.”

4.4 Maintenance

The clean air policy is still in its nascent stage of implementation. Capacity building measures for departmental and field staff have been developed and in process.

4.5 Outcomes

Monitoring and Evaluation are primary elements of the policy process. The policy outcomes are still to be demonstrated hence the success of the policy cannot be ascertained as yet.

Discussion

This research study enfolded as to what counts as evidence in the policy processes versus the conceptual understanding in the literature. It also elucidates how evidence is sourced and used during the policy formulation and implementation process in case of a recently promulgated public health policy in Punjab.

The study highlighted the reality of policy makers understanding of evidence as an expansive concept going beyond what is generally understood as evidence in scientific terms, a finding which concurs with many global studies on the subject. Contrarily, in the case of 'Clean Air Policy', the lead author being a technical expert in the field referred to evidence as academic research evidence which was considered the ultimate arbitrator of decision making.

This research study along with a large body of literature from the developed and developing countries endorses policymakers sourcing of information from diverse sources including interest groups, politicians, friends, other stakeholders etc. So while Researchers perceive evidence to be knowledge that is systematic, explicit and replicable,¹⁵ policy makers contrarily consider evidence as local contextual data, political, social values and beliefs of stakeholders etc¹⁶. Another crucial theme featured in the study pointed out to policymakers perceptions regarding 'relevance' of research. They reported difficulties in accessing relevant research and considered academic research not meaningful enough to be used in the process. A substantial number of studies refer to recognizing and catering to the informational demands of the public health policymakers.¹⁷ Our study results concur with global findings that due to inadequate interaction between researchers and policy makers, the research needs of the latter are not addressed, hence lea-

ding to policies not sufficiently informed by evidence. Another salient find from our research that is in consonance with international literature on the subject is Policy makers consideration of policies to be significantly relevant based on their economic impact. In case of the 'clean air policy' the lead author made a point to incorporate the cost-benefit analysis/ cost effectiveness of the policy implementation strategies. Resultantly the policy gained wider traction from the highest echelons of government. This reaffirmed the necessity to take into account a policy's political and economic viability. The lead authors in case of the policy were accomplished professionals and knowledgeable in their respective domains. As a result, these personal attributes contributed to the development of a comprehensive policy.

Policy makers in the study stated preference for verbal mode of transmission of research findings as compared to peer reviewed papers which are cumbersome to understand.

The study respondents stated that leadership in the country is ultimately responsible for the way policies are formulated. This finding is reinforced from the Eastern Mediterranean region where ineffective coordination across different ministries in the government, inadequate resources, donor agendas, irrelevancies in research related to health systems, exerted strong influence on the policy-making processes.¹⁸

Influence of political context was an over-riding theme in our study. Literature from other settings also highlights that fragile institutions with weak administrative structures, and concomitant lack of accountability have been highlighted for policy formulation being based on personal preferences of government actors rather than evidence.¹⁹ Influence of political context, rife with instability and lack of transparent practices, hinders use of evidence in policy-making.

Policymakers in our setting as well as elsewhere have been reported to lack the skills to single out and adopt quality research, a finding that they are reluctant to acknowledge – hence require evidence based skills training. Our study findings corroborate that donors exert profound influence on policy-making processes in our context. Evidence from other countries also suggest that they can facilitate use of evidence in developing countries but may dictate their agendas on recipient

countries. The present study highlights the positive role of donors in the policy formulation phases where they provide immense financial and technical support for policies processes.

Several windows of opportunity to catalyze change were alluded to including judicial activism, international commitments such as the ongoing Sustainable Development goals etc. The limitations of the study were that the implementation process and subsequent study outcomes could not be studied hence inferences were not derived regarding success of the policy. Due to various constraints, a sizeable sample from academia (researchers), public-private partnerships, and global actors could not be included to add to the strength of findings. The local context restricts the ambit of generalizability of study findings but the conceptual model makes theoretical generalizations practical. It was however, lacking in analyzing the myriad actors involved in the process, including the Advocacy coalition and the capacity building strategies of involved actors.

Conclusion

The notion of evidence-based policy being the norm in the developed world has been gaining prominence lately in low and middle-income countries. The study highlighted that policy actors functions and intent had substantial bearing on the strategic options in all phases of the policy process. The study findings advocate a modification of the conceptual framework. Recommendations of the study include addressing capacity constraints on both ends of the policy spectrum i.e. evidence generation as well as formulation and implementation. Barriers to adequate uptake of evidence in the policy processes can be addressed by investments in capacity building of researchers as well as policy makers to establish networks for contextualized evidence production in our settings. Increased transparency and accountability of the processes as well as formal channels of communication between actors (policy makers and researchers) will result in enhancing evidence use in policy processes for strengthening weak health systems.

Ethical Approval: The Advanced Studies and Research Board, University of the Punjab, Lahore, Pakistan approved the study for Ph.D thesis.

Conflict of Interest: The authors declare no conflict of interest.

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Authors' Contribution:

ST: Conception, design, data collection, analysis, drafting the article

RZ: Design, analysis, drafting the article, review the article

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