

A retrospective analysis of a community-based health program in Papua New Guinea

HELEN ELIZABETH SCOTT ASHWELL^{1*} and LESLEY BARCLAY²

¹Graduate School for Health Practice, Charles Darwin University, Darwin, NT 0909, Australia and

²Department of Rural Health, Northern Rivers University, Lismore, NSW 2480, Australia

*Corresponding author. E-mail: hashwell@bigpond.com.au

SUMMARY

The Women and Children's Health Project was a large Australian funded aid Project that sought to improve the health of women and children in Papua New Guinea between 1998 and 2004. Community development and health promotion interventions aimed to increase community support for attended birth and children's health. Green and Kreuter's [Green, L. W. and Kreuter, M. W. (2005) Health Program Planning: An Educational and Ecological Approach, 4th edition. McGraw-Hill, New York] PRECEDE-PROCEED model of health program planning was applied retrospectively to critique the design, implementation and evaluation of the Project. An outcome evaluation (2006) provided data for this analysis

and investigated long-term impact using a multi-methods approach. Application of the PRECEDE-PROCEED model was useful, but the model fails to sufficiently well identify 'inhibiting factors' as part of the educational and ecological assessment during the planning phase. Pre-defined objectives and contractually obligated outputs in a donor funded business model negatively influenced Project activity and outcomes. Despite this and the challenging context for implementation, Project interventions improved interaction between the community and health systems, and improved use of maternal child health services.

Key words: community health promotion; healthy communities; maternal health; developing countries

BACKGROUND

The Women and Children's Health (WCH) Project was an Australian bi-lateral aid project implemented between July 1998 and December 2004 in Papua New Guinea (PNG) (International Development Support Services, 2004, unpublished results). The Project objective was to reduce maternal and infant morbidity and mortality by enhancing the quality and coverage of rural health services (AusAID, 1995b, unpublished results). The Project was implemented in all 20 provinces of PNG, worked at the national, provincial and district levels drawing on a budget of AUD32.5 million.

A logical framework matrix guided implementation of the design using milestones to monitor achievement against objectives (AusAID, 2002) and performance against contractual obligations. The original design was considered culturally inappropriate with a 'top-down' approach to community development. This, compounded by contractual constraints (PNG Women and Children's Health Project, 1999, unpublished results) and facilitated by a changing political and economic environment and foreign aid development context, permitted a 're-scope' of Project objectives and outputs mid-way through the Project in 2001. The re-aligned 'bottom-up' approach was more

consistent with principles of community health development. Active community involvement in extensive review and re-alignment of the intervention positively influenced the level of cooperation and collaboration subsequently.

Project outputs were broad including improved access to health services and in-service training for staff (PNG Women and Children's Health Project, 1999, unpublished results). Activities enhanced the capacity of health workers at national, provincial, district, health facility and community level (PNG Women and Children's Health Project, 2002, unpublished results). Community development and health promotion interventions, focused on in this paper, sought to increase community support for the health of women and children. Also addressed were broad problems of village sanitation, hygiene and housing. Behaviour and attitude changes were required of individuals and the wider community to improve the health and survival of women and children.

Reflecting on and analysing the Project using a PRECEDE-PROCEED framework, this paper explores the design, implementation and evaluation processes of community engagement strategies under the WCH Project. This included the community action and participation (CAP) program and village health volunteer (VHV)

program and related policy, standards and training materials. A broad range of historical documents, external and internal reports, government and organizational documents provided detailed background information. A mixed-methods approach was used to obtain qualitative and quantitative data during 6-month intensive field work in 2006. The interaction of the community and health workers, and the community's use of health services, was assessed through interviews and community discussions. Data were collected from 175 key stakeholders (national, provincial, district and village) and 93 communities across 10 provinces. This informed the analysis.

HEALTH PROGRAM PLANNING WITHIN WCH PROJECT

Green and Kreuter's (Green and Kreuter, 2005) PRECEDE-PROCEED model of health program planning provides a framework for health program planning and evaluation aimed at behaviour change. A series of diagnostic steps are used in health program planning (Phases 1-4) leading to implementation and evaluation (Phases 5-8) (See Figure 1). Studies have demonstrated that this systematic planning

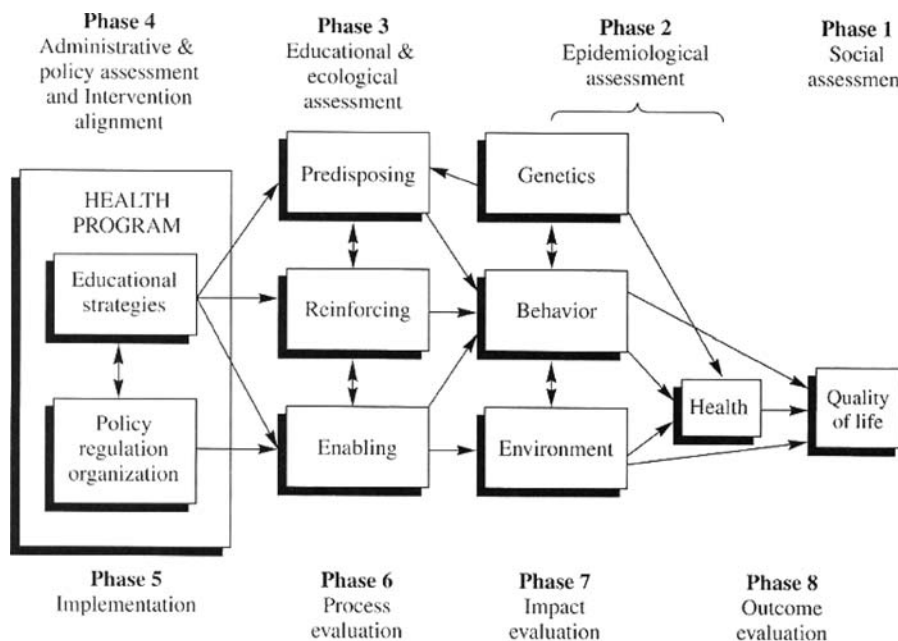


Fig. 1: Green and Kreuter's (Green and Kreuter, 2005) PRECEDE-PROCEED model of health program planning.

process is able to adjust to changing circumstances, actively engages the target audience and can produce effective and sustainable results (Mittelmark, 2001; Kreuter and *et al.*, 2003; Green and Kreuter, 2005). Green and Kreuter (Green and Kreuter, 2005) argue strongly for multi-disciplinary input to planning processes, so different perspectives are brought to problems. In combination, these can generate sound and effective program interventions. Program planners using such a model can set feasible, culturally appropriate and adjustable objectives, by investigating a wide range of factors potentially influencing health behaviour, including the social-cultural situation. The model was applied retrospectively to critique the community health interventions implemented under the PNG WCH Project between 1998 and 2004 and test the model itself. An outcome evaluation in 2006 investigated the long-term impact of the interventions and is incorporated in this analysis.

Phase 1: social assessment

International consultants, in consultation with senior government health officials, undertook a situational analysis and social diagnosis sourcing secondary data in 1995. The serious state of women and children's health was identified as the quality of life concern. Initially, un-specified 'health workers' were identified as the target audience, with individuals in the wider community as the 'grass roots' beneficiaries (AusAID, 1995a, b, unpublished results). However, these definitions were too broad and non-specific to adequately engage participation in the planning process.

Phase 2: epidemiological assessment

Project designers identified high maternal and infant morbidity and mortality rates, increased prevalence of disease, and high incidence of malnutrition as key factors influencing women and children's health. This was exacerbated by a low female literacy rate; poor education; poor social status for women and social disintegration; low economic status and over population (AusAID, 1995b, unpublished results). Community support for health services was deteriorating, aggravated by decreasing quality of very limited and geographically dispersed services and concomitantly reduced compliance

with treatment (AusAID, 1995b, unpublished results). For example, people had to travel long distances to health facilities where there was an absence of health staff, poor attitudes and limited health prevention advice given. Factors influencing maternal health outcomes were limited access to care, very limited emergency obstetric care and lack of birth supervision by skilled attendants (AusAID, 1995b, unpublished results). There is no documentary evidence to suggest Project designers engaged the target group they identified in the planning process (AusAID, 1995b, unpublished results).

Phase 3: educational and ecological assessment

Green and Kreuter's (Green and Kreuter, 2005) PRECEDE-PROCEED model classifies causal factors that collectively influence health behaviour into predisposing, reinforcing and enabling (Figure 1). The WCH Project designers identified factors that fit within these categories. Predisposing factors were community compliance; cultural beliefs about cause of illness; lack of preventive health awareness; limited education; low value of women in society (AusAID, 1995b, unpublished results; PNG Ministry of Health, 2000). Reinforcing factors included improved health of individuals, admiration and approval of peers, recognition by community leaders and pride in the community's health status (AusAID, 1995b, unpublished results). Other factors considered were the need for respect and support of health workers, confidence to act based on personal knowledge and skills, and empowerment of others for self-reliance in health. Enabling factors identified were accessibility, availability and affordability of health services, and the quality of health services provided. Factors relating to the community were basic health knowledge and skills, availability of resources to facilitate and empower action for change (AusAID, 1995b, unpublished results).

It appears Project designers and PNG government officials assumed these issues would influence Project outcomes, rather than seeking verification of this. Project documentation indicates some background information was obtained, however, by phone or provincial office visits from seven (30%) relatively successful community health programs (AusAID, 1995a, b, unpublished results). The engagement of provincial- or district-level community health

program managers and implementers appears limited in identifying factors influencing health, behaviour, lifestyle and environmental change necessary to achieve the Project objectives.

Phase 4: administrative and policy assessment, and intervention alignment

Project designers identified that community level support of individuals for a healthier lifestyle could lead to improved health. They assumed raised awareness of women and children's health issues among community leaders would better equip them to identify and address related community issues. It was anticipated this would be achieved in partnership with local health service providers. District-level health workers were expected to mobilize community support by working with village-level committees and health volunteer programs supporting maternal and child health activities (AusAID, 1995b, unpublished results). The educational and health promotion capacity of key players from central through provincial and district levels was ignored during the design process or, considered too difficult to address contractually or politically.

It was assumed that individuals at local level, better informed on cause and prevention of common illnesses, would seek appropriate and timely care and act on preventive and health promoting information. Intervention underpinning community activities were supposed to remove some of the barriers preventing rural health workers working effectively. The strategies were expected to assist both government and non-government sectors to develop and implement appropriate and effective community health prevention programs. Design documentation indicates the central government's capacity to 'absorb' or work effectively with the Project was again assumed to be adequate. Proposed activities were aligned with Department of Health priorities.

The WCH Project's objective for community engagement was to 'foster community involvement in, and support for, the health of women and children' (AusAID, 1995b, unpublished results, p.14). Strategies were designed to support health volunteer programs, develop culturally appropriate health education materials and fund community health development activities through local organizations. Revitalizing routine MCH services and increasing

community support for these services was seen as a priority (PNG Department of Health, 1998). These were dealt with through other components of the Project so are not analysed here, despite their obvious relatedness.

Donor support for the Project ensured financial and equipment resources was available and adequate. Human resource capacity to support coordination of implementation of this major activity from national to community level was restricted, however, to one external technical adviser supported by one national level counterpart. They were expected to manage work across 20 provinces, 89 districts and a population base of around 5.2 million. There were additional risks and limitations evident within the administrative leadership identified through this process. As the strategic approach changed prior to implementation, and the limited capacity of national counterparts was realized, it became obvious the Project was under-resourced with external technical advice and local leadership. A Project 're-scope' in 2001 resulted in expansion of foreign technical adviser support but did nothing about deficits in local expertise or leadership (AusAID, 2001, unpublished results).

Assessment of provincial- and district-level community health program implementers' readiness for change, willingness to collaborate and cooperate with implementation was unknown as they were not engaged in planning. Time, logistics and financial pressures of a large donor aid project design generally preclude involvement of lower level target audiences (Oakley and Kahssay, 1999; Grammig 2002).

The Project design had been produced within the Australian Agency for International Development's (AusAID) commercial contracting processes current until 2001 (AusAID, 2002). This model employed an externally competitively contracted team who were constrained by time and unable to engage lower level target audiences. This was not congruent with community-based development contemporary best practice (Ife, 2002; Talbot and Verrinder, 2005). Nor did it fit with the PNG Department of Health's 'healthy settings' approach and application of WHO 'healthy island' policies (PNG Department of Health, 2003b; World Health Organization and PNG Ministry of Health, 2000). Each of these philosophies, however, is consistent with the approach advocated by Green and Kreuter (Green and

Kreuter, 2005). Green and Kreuter's (Green and Kreuter, 2005) model supports a much less structured 'bottom-up' approach to design, with the community participating in the planning, implementation and evaluation processes. In addition to the 'top-down' approach to design, additional issues presented pragmatic concerns to Project implementers (AusAID, 2001, unpublished results). For example, the 1995 Organic Law resulted in decentralization of structures and functions transferring administration and funding to provincial and district levels. This limited the role of central level in policy development, standard setting, monitoring and evaluation (Bolger *et al.*, 2005).

Phase 5: implementation

The WCH Project technical advisers were constrained by working within a commercially tendered and managed project. Initially, this was done by a pre-determined set of priority health issues and ways to address these. Added to this were constraints of pre-defined goals and objectives and a contract limiting adjustment to program planning that required 'outputs' within pre-determined timeline that was tied to payment schedules. This placed pressure on external technical advisers to implement activities with or without the support of counterparts. It did not allow time for Project advisers to establish relationships, work at the pace of national counterparts or build collaborations.

Project advisers attempted to engage Department of Health officers with little success. Limited knowledge as well as resources negatively influenced the capacity of national counterparts with poor response (International Development Support Services, 2004, unpublished results).

When implementation commenced in mid-1998, the initial design approach was critiqued for cultural appropriateness, relevance and viability as significant changes had occurred (AusAID, 2001, unpublished results). The contractual environment failed to allow time and flexibility to fully engage provincial- and district-level community health program implementers. Nor did the contract allow for flexibility to adapt to changing circumstances. This affected the Project's ability to gain national counterpart cooperation and 'ownership' of the intervention. Issues of alignment of staff at each level of the system to sustain reform had not been thought through.

The donor agency agreed to a re-alignment of Project strategies which provided a more feasible approach to implementation. Provincial- and district-level community health program implementers were identified as the specific target audience for intervention activities. These people would be assisted to support 'grass roots' beneficiaries to increase awareness of the need for improvements in community-level maternal and child health. An extensive consultation process occurred through a review in 1999 which engaged key stakeholders, and the target group itself, from national to provincial, district and community level (AusAID, 2001, unpublished results). Their collaboration re-focused planning into a 'bottom-up' process. This positively influenced the level of cooperation and collaboration in implementing the Project's community activities from participants. The review gave clear direction to the Project and Department of Health for revising the strategic approach to community-based activities (AusAID, 2001, unpublished results). However, leaders from this central group were an insignificant part in this process. Therefore, it is not surprising their 'ownership' and advocacy of intervention activities remained limited.

The revised strategies provided more feasibility with program implementation, and potentially more locally sustainable outcomes. Including health volunteer programs building on what already existed or was emerging (PNG Women and Children's Health Project, 1999, unpublished results) was suggested and more congruent with community development approaches (Ife, 2002; Green and Kreuter, 2005; Talbot and Verrinder, 2005) than had been possible in the original design.

The lack of motivation and specific knowledge and skills of key counterparts presented Project technical advisers with significant challenge. These were compounded by a politically difficult climate and a business model of donor aid. Training and supervision of staff and careful monitoring of Project activities were incorporated into the original design. However, there was a limited capacity within the National Department of Health to lead and continue activities after Project completion. Nor were there any staff trained in the necessary skills to do so. Donor aid funded projects constrained by a limited time-frame for completion often inhibit opportunity to build capacity and complete community health development interventions (Oakley and Kahssay, 1999; Grammig, 2002). Nor does a limited

timeframe and contractual obligations facilitate building relationships and skills that are dependant on a longer term commitment.

Two main strategies were employed. The Department of Health sought to improve community participatory action in support of the government policy of 'healthy settings' through a community action and participation (CAP) Program. The Project worked with the Health Promotion Branch to strengthen rural health worker capacity to motivate communities to take responsibility for their own health. This was achieved, in part, through development of a *Guide and Tool Kit*. Over 1100 individuals were trained in its use (International Development Support Services, 2004, unpublished results).

The second intervention focused on supporting VHVs within 'healthy village' settings. The Project strengthened VHV programs, developed training materials and resources. Regular technical advisory meetings developed a strong network and partnership between VHV programs and Department of Health. Support for developing capacity of VHV program managers included technical advisory meetings, program management training and training trainers to enhance their teaching skills using newly developed resources. The CAP process was integrated with VHV activities. A system to monitor VHV activities from community to national level was developed with steps to do so put in place at each level.

Phase 6: process evaluation

Despite contractual constraints, the Donor allowed adaptations to plans to accommodate personalities and changing local circumstances. Project advisers responded to feedback and made minor adjustments to planned intervention activities while activities were still in progress. Regular monitoring and subsequent approved modifications occurred through reports and annual activity plans in line with Department of Health planning processes. Regular VHV technical advisory meetings involving the re-defined target group of provincial and district program managers gave valuable feedback to facilitators who adjusted training and resources accordingly.

Phase 7: impact evaluation

An impact evaluation conducted in 2004 revealed Projects interventions had made

substantial in-roads in achieving the Department of Health's vision of 'healthy village' settings. Success was attributed to multiple factors including empowering communities and re-orientating local health workers towards health promotion. Other achievements were on-going national and provincial government support through institutionalization of these activities, and partnerships fostered with stakeholders at all levels within the health system. Community leaders, particularly in remote communities, had demonstrated a hunger for information and skills in identifying solutions to priority problems. Problems with a lack of health indicators to evaluate changes in broad measures of community health, and the Department's limited direction in implementing 'healthy village' settings were identified.

Twenty-eight new VHV programs were established and 20 former programs expanded supported by the technical advisory group, new training and resource materials. Newly emerging programs had been supported with resources and financial support provided to train more VHVs.

At community level, the findings identified changes in people's lives, physical health and behaviour and increased community participation in support of health development initiatives. These were considered locally to have contributed to a reduction in maternal and infant mortality. The training and tools were identified by communities as stimulating community action. Observational data and interviews suggested enhanced self-reliance, a positive competitive spirit between communities, establishment of model 'healthy villages' and increased community support for VHVs.

The reoriented 'bottom-up' approach used to implement program activities and training of local trainers contributed to progressive improvements in community health. The VHV training resources assisted to promote healthier lifestyles around maternal and child health. These were congruent with the principles of primary health care focused on the underlying influences on health (Talbot and Verrinder, 2005).

Better funded Project technical advisers were able to engage provincial and district managers more effectively than their centrally located counterparts with limited staff, skills and travel budgets. Collaboration strengthened local capacity to support community health initiatives

and claims to 'ownership' of the intervention. Participation in the six-monthly technical advisory group meetings funded by the Project led to development of culturally appropriate training resources as well as building national networks. These more locally based officials may have found the Project less onerous and challenging than did national counterparts working with Project advisers on a daily basis. Central officials had increased work stress created by the project that was of little direct benefit to them. Despite these promising results, contractual milestones proved to be unreliable measures of achievement and put pressure on Project staff with dual, and at times, conflicting goals.

Phase 8: outcome evaluation

Two years after completion of formal Project activities an outcome evaluation investigated the long-term impact. Results showed intervention activities had improved interaction between the community and rural health workers, influencing improved use of maternal and child health services. Qualitative data suggested new health knowledge had initiated attitude and behaviour changes which led to improvements in environment, sanitation and hygiene practices. Healthier lifestyle practices had contributed to improved physical health, social and economic well-being, positively influencing nearby communities (Ashwell, 2008). Evaluation suggested sustainable self-reliance in health can be achieved through community led and maintained activity.

Key factors influencing success were a village and district-level motivated and trained individuals as the catalysts for change; empowered leadership through new community governance structures; effective practical visual tools; and the linking of trained VHVs to rural health workers. Failure was attributed to poor understanding of community development; limited sharing of information; a 'top-down' approach and weak community leadership. The study identified anomalies in health information collection processes and lack of village-level baseline data to support claims of improved community health status. Gross maternal and child health statistical indicators and incidence of illness failed to confirm significant change in statistics as data cannot be disaggregated to show village-level outcomes.

DISCUSSION

Donor aid project designers are required to develop plans under serious limitations of time, contractual obligations and without a long-term investment in outcomes (Grammig, 2002). By restricting consultation during Project design to central level, it was left to senior health officials to interpret the needs of lower level stakeholders (target audience). This creates risks for cooperation and collaboration, and the success or failure of intervention activities (Green and Kreuter, 2005).

Correct identification of, and active engagement with, the target audience is essential at every stage of program planning and implementation to create 'ownership' of the intervention (Green and Kreuter, 2005). This ensures that program aims and objectives are relevant and able to achieve locally owned and sustained results (Laverack and Wallerstein, 2001). Failure to do so is detrimental to long-term sustainability (Oakley and Kahssay, 1999). The initial Project designers' non-engagement with or clarification of a target audience and alignment with levels of leadership across the system was problematic.

Following the redefinition of the target audience, the Project team were able to work more effectively with them. Contractual pressures, lack of resources and capacity centrally negatively influenced the Project staff's collaboration with central leadership. This significantly influenced the long-term sustainability of activities at community, district and provincial level. Limited national counterpart cooperation with Project advisers negatively influenced the extent to which the Department owned, advocated for, or led the strategies.

According to Talbot and Verrinder (Talbot and Verrinder, 2005, p.111) 'the process of participation in change' is as important as the outcome. The Donor agency design and funding model constrained Project implementers through a contract that required 'input' activities and expected 'outputs' according to a given timeframe. This failed to take into consideration the processes involved in community development that empowers communities to make changes. It also inhibited relationships and capacity building at central level as central officials did not directly benefit from the Project, despite it adding significantly to their workload and responsibility. While at local level

VHV program managers ‘owned’ the intervention, adoption of social justice and empowerment principles of community development needed more time. The limited timeframe and donor expectations negatively influenced outcome sustainability by failing to take into consideration long-term perspectives.

The time pressure on Project advisers to achieve outcomes and national counterparts’ lack of ownership of Project activities created tension between Project technical advisers and their counterparts. This resulted in activities being implemented with or without their cooperation and collaboration. The issue of gender may also have negatively influenced Project outcomes, as female Project advisers overrode male senior health officials. Despite or possibly because of this Project technical advisers managed to satisfy donor agency requirements while attempting to remain flexible in adapting to changing circumstances.

The re-aligned ‘bottom-up’ community engagement strategies were more consistent with principles of community-based health development, empowerment for self-reliance in health and health promotion (Ife, 2002; Green and Kreuter, 2005; Talbot and Verrinder, 2005).

They also aligned with the PNG Department of Health policy on health promotion and ‘healthy village’ settings (PNG Department of Health, 2003a, b; World Health Organization, 2002). This realignment however ignored that, by default, central officials were also a target group who needed to own and invest in Project intervention activities.

Green and Kreuter’s (Green and Kreuter, 2005) PRECEDE–PROCEED model does not directly identify ‘inhibiting’ factors, as part of the educational and ecological assessment planning phase, but it appears these should be identified and addressed by this step. We found this process insufficient in our use of the model during this evaluation of a large aid project. Identifying a separate set of inhibiting factors however helped. In this Project, these Inhibiting factors were pre-defined objectives, contractually obligated inputs and outputs be achieved within a limited timeframe. The contractual environment severely constrained implementers in building community capacity and gaining intervention ownership and sustainability. Inhibiting factors had the potential to negatively influence other causal factors (predisposing, reinforcing and enabling) in changing

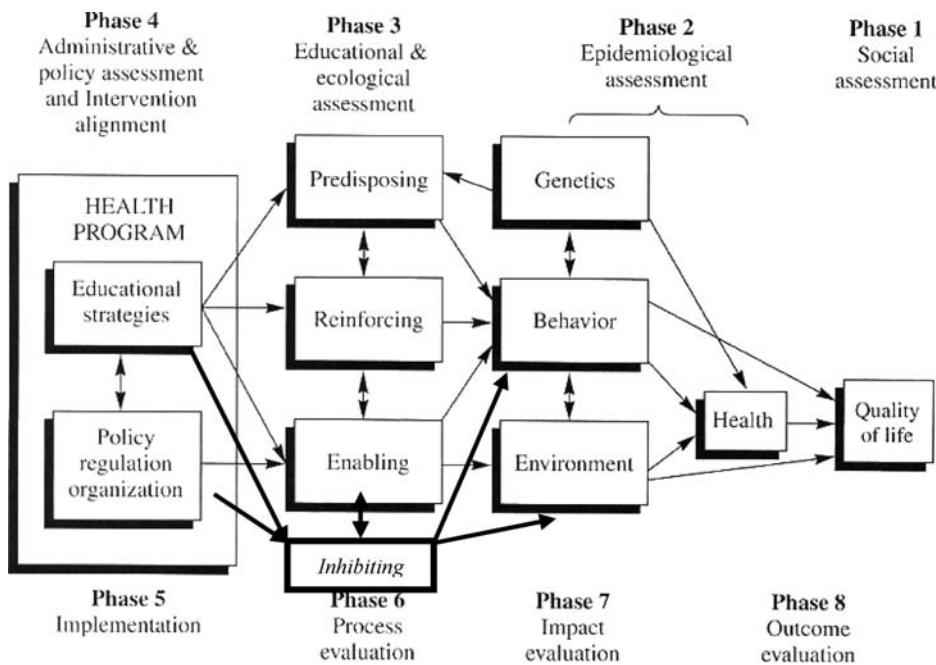


Fig. 2: A modified version of Green and Kreuter’s (Green and Kreuter, 2005) PRECEDE–PROCEED model of health program planning.

behaviour. The donor funded business model of delivering aid project also negatively influenced WCH Project design and outcomes (AusAID moved away from this model of aid delivery in PNG in 2001.). This research suggests the benefit of adding a new process under Phase Three of the model, namely identifying if 'inhibiting factors' exist. This is demonstrated in Figure 2. This process would enhance a risk management process and its management from the earliest days of a project.

Despite the difficult political, socio-economic and business model context, this research confirmed that Project interventions improved the interaction between the community and health system, and improved use of maternal and child health services. This work confirms sustainable self-reliance in health can be achieved through community led and maintained activity, even if this process is instituted later than optimally. The analysis testing the PRECEDE-PROCEED model suggests this would benefit from an additional step in the planning phase when identifying the predisposing, reinforcing and enabling factors. We suggest identifying inhibiting factors could be useful in allowing project designers and implementers to more fully address potential negative influences on a project.

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