Gastroenteritis prevention: Improving the health of young indigenous populations

Judith Dean *BN, RN, RM*

Summary

The Australian Bureau of Statistics on numerous occasions have found that at least three times as many Aboriginal and Torres Strait Islanders live in remote rural areas than Non-indigenous Australians. Non-Indigenous populations living in remote areas of Australia face similar isolation and limited access problems to Indigenous people. Differences become evident in the health status of these two populations when comparison is made between levels of socio-economic status, education, water, sanitation and standards of shelter experienced and their direct effect on environmental health issues and health standards.

Gastroenteritis in children under ten years of age is one of the highest causes for hospitalisation of Indigenous in Australia. Water borne infections and associated illnesses have been identified as major contributors to the higher rates of mortality and morbidity within remote indigenous populations. Environmental issues associated with poverty, high cost of living, limited access to education, legal and welfare services, recreational facilities and health care services contribute to the inequities of the Indigenous populations wellbeing and the high incidence of Water Borne Infections.

Gastrointestinal diseases will be targeted to develop an individualized Environmental Health strategy for remote Indigenous communities. Identified inequities and currently instigated strategies which attempt to rectify and develop remote indigenous health status will be examined, in order to assist in the development of a culturally appropriate sustainable strategy for the prevention of gastroenteritis within the young Indigenous population.

Project Strategy Development

Goal

- Improve health status of children in remote Indigenous communities targeting education and environmental issues identified as causative factors of gastroenteritis.

Objectives

- Reduce the risk and incidence of gastroenteritis through education.
- Establish sustainable development through partnership with the local community and involved health and environmental agencies.

Key Action Areas

- Education
- Children
- Community members and allied agencies
- Sustainability

Identified Obstacles

- Available resources
- Access and isolation
- Community motivation
- Destruction of society, cultural and traditional family support structures due to alcohol, drugs, and poverty.

Background

The World Health Organization (WHO) (1996) identified that nearly a quarter of the world's population do not have access to safe water and sanitation standards and that improving these could reduce mortality and morbidity rates associated with water by up to 60%. Across the world in developing countries a child dies every 8 seconds from water related disease such as diarrhoea. The WHO established that access and availability of safe drinking water, sanitary disposal of excrement, use and protection of these facilities and community support and involvement as the three essential components in any strategy development to achieve the greatest positive impact on reduction of water related diseases.

The Australian Bureau of Statistics (ABS) 1996 Census reported that 2% of Australia's total population are identified as Aboriginal and Torres Strait People (ATSI). It also found that 27% of the ATSI population live in remote rural areas compared to 14% of the total population. The National Environmental Health Strategy (1999) identified similar hazards and needs to those identified by the WHO in world populations in remote Indigenous Australian communities.

Public health aims to control disease and improve health standards by addressing social and structural population issues. Public health standards are directly dependent on the development of environmental health strategies. The realization of this intertwined dependence has lead to the beginning of improvement in the general health of populations. However, it remains evident that equal access for all populations is the major preventative factor in a health for all initiative. The WHO (1996) believes that "health and development are so intimately connected that the state of health within a country is one of the most revealing indicators of its development". Australia is one of the only developed countries to still have third World health problems. The WHO explains that this is not a failure of primary health care but an inability to provide healthy environments for all indigenous communities, (Environmental Health Strategy Submission, 1998).

A submission from the National Aboriginal Community Controlled Health Organization (NACCHC) for the Environmental Health Strategy (1998), highlighted that a third of aboriginal people are homeless or living in inadequate conditions with overcrowding of greater than four people per bedroom. Water supplies do not meet the national quality guidelines in areas where 17% of the indigenous population live. And in 1991, 20% of indigenous children under 2 years of age in the Northern Territory Top End were diagnosed as malnourished, failure to thrive or anaemic which can be attributed to water related causes.

Three obstacles found to be hindering the improvement of health in remote indigenous communities were the provision of sufficient appropriate housing, adequate safe water and access to affordable healthy food. All of which are areas taken for granted by mainstream Australians as basic components for daily existence. Data from a survey convened by the Aboriginal and Torres Straight Islander Committee (ATSIC) in 1992 identified that only three quarters of indigenous communities have access to properly operated and maintained water supplies and sewerage systems. This is a result of poor infrastructure and isolation of many communities. While health services appear to be accepted and more accessible, they have not developed adequately to cope with the increasing problems associated with isolated indigenous community needs, (Queensland Health: A Scoping paper 1999). These identified obstacles and inequities have a direct cause-effect relationship on the amount of WBI and diseases experienced in remote indigenous communities.

In Australia, Indigenous children have a twenty times higher morbidity rate associated with diarrhoeal disease than adults. (Strategic Environmental Health Work Group 1999). Hospital Casemix data and the health of Aboriginal and Torres Strait Islander peoples (1999) documents the rate of incidence for gastroenteric related illness for indigenous and non-indigenous people. In 1995–1996 this data highlighted that 7.81 per 1000 indigenous children under ten were hospitalised with an average 4.5 - 5.5 day length of stay compared to 1.9 per 1000 for non-indigenous children whose average length of stay was only 1.9 days. This extended length of stay and increased incidence translates to an immense difference between funding associated with urban health care facilities and rural and remote health care facilities that cater to indigenous people. Addressing the cause of gastroenteritis incidence and developing initiatives for prevention will allow reallocation of funding to further improve other aspects of rural and remote health and well being. Over the years nationally and at state level Australia has adopted and developed extensive strategies to address the inequities of environmental and indigenous health, but to date these conditions have not improved significantly.

Evaluation of recent projects

In 1986, the New South Wales state government introduced an Aboriginal Health Promotion (AHP) program that targeted issues such as environment, adequate water, sanitation and prevention, (Lawson and Close 1994). Community involvement was established using locally employed and trained AHP officers. While evaluation indicated that the project had merit and potential to assist change and improvement, its success was dependent on the ability and motivation of the AHP officers and communities members involved. Thirteen years later in 1999, the National Environmental Health Strategy identified that isolated indigenous communities continue to fail in reaching basic acceptable levels of health and environmental sustainability. Poor housing, overcrowding, limited safe water and sanitation, combined with minimal access to affordable nutritious food remain priorities needing to be address in order to improve the poor indigenous health status.

A Queensland health initiative called Challenge - Better Health for Indigenous Queensland (1998) highlighted that Aboriginal and Torres Straight Islander (ATSI) health status is the lowest in Queensland and that morbidity and mortality rates are at least five times greater than non-ATSI populations. It was established from findings that health care alone could not address the problem adequately. Cooperation between allied services like environmental health and housing and the participation of indigenous community members in planning and decision making will assist in the development of viable options which are sustainable and beneficial to the indigenous community as a whole. The key to effective multi-disciplinary planning is to have common goals and the avoidance of conflicting outcomes and messages delivered to target groups by the participating services.

Queensland Health Public Health Services (2001) adopted a multi-perspective planning approach to address strategy development of public health issues. Identified key participants involved in strategy planning included local governments, health services, public health care providers, children and young people, ministers, other government bodies and industry. Indigenous populations, children and youth were nominated as being key target groups for education and necessary change. Keeping the focus on client participation and multi service involvement will hopefully lead to positive changes and improvements in health.

In response to the Better Health for indigenous Queenslanders (1998) project development, Environmental Health Workers (EHW) were introduced throughout the state. This initiative was used nationally for improvement of indigenous health and environmental conditions. The aim was to train individual resource people with the ability to address and coordinate responses to the identified needs of ATSI communities. Housing, water and waste disposal were again targeted as the environmental health issues affecting the health status of majority of the indigenous populations. The philosophy that clean, safe, healthy environments enhances the wellbeing and health of community members was promoted. EHWs were trained to use local involvement and skills to address identified areas of need where possible with the objective to promote community ownership. Emphasis was placed on education. Effectiveness of this project was again reliant on the skill and motivation of the EHW and their ability to establish and manage community participation. Success of the project is dependent on continual collaboration and involvement of the service providers and target populations.

Strategies developed in collaboration with all interested parties will begin to address the issues. But there remains a need to break the continual cycle of strategy development, implementation and redevelopment of similar projects without any evidence of adequate results or improvement of indigenous health issues.

National strategies are aimed at improving the overall conditions and standards of living for remote Indigenous communities. It remains the responsibility of individual communities to address locally identified needs in order to improve the daily standard of living and health status of its residents. Remote area health teams and educators are sources of support and information for communities and have always been involved in daily strategy development to address immediate health needs. The willingness of a community to accept and sustain change and work in conjunction with all available resources and allied teams is an essential component for the successful of any strategy. The want to change must precede the act of change.

Cause-effect framework

The cause-effect framework for health recognises the link between development, environment and health. The framework recognises that although an exposure to a pollutant or other environmentally mediated health hazard may be the immediate cause of ill health, the driving forces and pressures leading to environmental degradation may be the most effective control of the hazard. The framework can be used to identify actions to break the cause-effect cycle.

Human health and the environment are interdependent on each other. Environmental hazards identified in communities have a direct effect on health status and disease presentation. Action plans developed from identified indicators of hazards and potential damage ensures that appropriate steps are taken to prevent negative environmental and health effects. Incorporating this method of response action development into strategic planning assists in the instigation of effective long-term sustainable policy development and outcomes for the population.

Environmental factors identified as hazards in relation to the incidence of Gastroenteritis and other WBI include:

- Water supply- drinking, bathing, washing and recreational
- Sewerage and waste disposal
- Shelter and housing
- Overcrowding
- Food source, handling and storage
- Animal handling- domestic dogs,
- Fly and insect control

(Queensland Health 1999)

Prevalence of environmental hazards and their association with transmission of preventable WBI are important in the control of environmental health issues. Education at all levels of society is essential in order to break these transmission cycles. Cause-effect frameworks can be adapted to suit all levels of planning and environmental health aspects. Corvalan et al (1999) outlined a cause-effect framework for microbiological water contamination that can be applied at a national or community level. (See Table 1). Corvalen et al. (1999) highlights that the action of education has a direct effect on the incidence of diarrhoeal disease.

Table 1 Microbiological water contamination. Environmental Health Indicators.

	Descriptive Indicators	Action Indictors
Driving Force	Level of poverty in the community	Expenditure on water and sanitation improvements
Pressure	Percentage of households without safe drinking-water supply	Number of unserviced households provided with clean supply per year
State	Coliforms in water	Extent of water quality surveillance and water treatment
Exposure	Percentage of population exposed to hazardous water contaminants.	Extent of public education programs on water hazards and treatment in the home
Effect	Morbidity and mortality from diarrhoeal disease.	Number of cases treated in Hospital and clinics.

Hospital Casemix data from 1999 indicates that gastrointestinal infections resulting from environmental hazards are common in indigenous communities. In 1995-1996, viral enteritis, rotavirus, *Campylobacter*, *Salmonella*, *Giardia*, *Shigella* and food poisoning were identified as the seven highest causes of hospitalisation for indigenous children under ten years of age. Children are at the highest risk from gastroenteric infections and need to be the target of action to achieve the optimal effect from education and prevention.

Development and design

Designing an environmental strategy entails careful consideration and identification of problems and hazards, assessment of the situation, setting objectives, prioritising actions and establishing community participation. Clear concise outline of objectives and expected outcomes is essential. Careful planning helps identify strengths and weakness of the proposed strategy, community resources, motivation and cultural issues.

The World Commission on Environment and Development (1987) states that development must be sustainable and meet the immediate identified needs of the target community without causing negative effects on future standards of health and well being (enHealth 2000). Participation of the target community is essential to make the strategy sustainable. Collaboration of all parties ensures objectives meet the needs of the community while addressing national and state health standard initiatives.

Education is the key to change and improving health. Bauert et al (2001) believe that linking education and health care from an early age can enhance maintenance of education and health throughout life. Incorporating education of children and youth into the Environmental Health Strategy ensures that the project and its objectives are applicable and promotive of a safe healthy environment conducive to wellbeing and ongoing learning. Understanding the relationship between the environment and health outcomes prepares children for future care and protection of their community. School based health education will be the strategy used to promote sustainability and long-term positive outcomes.

Key action areas

Education and Children

Education is the key to change since it provides people with the skill to understand and choose. If the correlation between the cause and effect is not understood or evident to the affected, change will not occur. For education to be successful, programs must increase knowledge and understanding and promote skills to address the cause. The target group's attitude, motivation to learn, cultural beliefs and differences need to be considered in the provision of appropriate education.

Queensland Health's (2001) aim of targeting children and youth in the development and delivery of public health prevention strategies was to provide them with the skills and tools with which to develop their full potential and become active members of the community. By providing education, positive role models, access to quality appropriate care and services, the young populations will become empowered and able to assist in the improvement and maintenance of our environment and health.

Because children are identified as at most risk from gastroenteritis and they are more open to change and education, children-targeted education is an ideal method to instigate change. There is a correlation between health and education that ensures improvement of wellbeing. Bauert et al (2001) believe that if education is commenced at a young age it provides children with the skills to face life and change which is beneficial to themselves and the community. Providing a safe positive environment especially in the first six years of life, which is known to be the formative years for a child's future growth and development, provides an environment conducive to learning and positive life experience (Queensland Health 2001). Early intervention and the prevention of stress in childhood such as illness has a direct effect on development of health risk behaviour in adulthood.

Previous strategies have targeted Indigenous children as the key area for action. Chronic suppurative otitis media (CSOM) has a high incidence of occurrence within indigenous populations. In the Northern Territory 75% of indigenous children tested have significant hearing loss from CSOM. Resulting hearing loss and learning difficulties have immense impact on health and wellbeing of children and society, (Bauert et al 2001). A program introduced into Northern Territory schools addressing ear and nasal hygiene has been successful since it targets appropriate groups and is easily introduced into daily school routine. A similar program for gastroenteritis is feasible.

For people to successfully learn there must be the desire or need, a suitable environment and a reward as in praise of achievement. Repetition of information, visual stimulus, the opportunity for hands on practice and fun are stimulants for children to learn. In order for a project to be successful it must address the aspects of good learning while meeting the objectives and have a positive effect on environmental and health status outcomes. Education tool development by identified target groups will assist in meeting these learning methods and needs. Using locally identified risk environments and familiar situations allow the children to learn by visualizing and demonstration.

Community members, Allied agencies and Sustainability

Project development must be sustainable and beneficial to the present as well as future generations of society (WHO 1996). Targeting children and young community members begins the process of preparing for future development. Prior to achieving this level of sustainability and change, community councils, leaders and adults need to be involved and accepting of development and change. Indigenous community councils are responsible for the co-ordination and management of community administration and life. Support and commitment of the council is essential and will assist in the identification and nomination of community members to be involved in the project development and instigation. This will facilitate community ownership of the project that will enhance benefits of expected outcomes. Community members must identify that the causative factors and identified hazards are important before successful implementation can occur. Feelings of involvement and ownership will also increase the longevity of the project. Effective communication between health, allied services and the community ensures active involvement. It is the responsibility of health and other agencies to provide information and support to enable the community to make informed decisions. Understanding gained from education and involvement is essential prior to instigation of the proposal. Open communication also allows health and allied agencies to understand the significance of culturally appropriate actions. Developing a strategy that is beneficial to the health status of a community while maintaining cultural integrity further enhances the potential positive impact of the proposal. Commitment and involvement from community council and elders indicates acceptance and gives direction to the young of the community.

A multidisciplinary approach to environmental health is essential. Identifying risks and determinants to safe environments and health status from a multi-facet outlook ensures all influencing aspects are identified and can be address using available resources (Queensland Health 2001). Planning teams should involve representatives from curative and health promotion structures, environmental health teams, education departments, industry and maintenance services, cultural and community groups and leaders. Involvement of all interested areas of health and community services ensures that the environment is protected thereby protecting health. National and state strategies aim at preventing and altering environmental changes before the health status and disease incidence are affected. Long-term, locally developed and based projects have the same objective of protecting environmental health but have the immediate aim of interrupting the continuum between health and disease. Easily identifiable benefits and measurable results such as the decreasing incidence of gastroenteritis in children for the involved community will assist ongoing community involvement. A gradual change in project emphasis from health to environmental health promotion will evolve with continued positive community involvement and achievement of expected outcomes and objectives.

Action strategies

Objective 1: Reduce the risk and incidence of gastroenteritis through education.

Actions

- Develop educational tools for school children outlining causative factors and prevention of Gastroenteritis, basic health and hygiene and sanitation needs in conjunction with interested parties.
- Develop outline of education format for introduction into school programs.
- Facilitate target group participation by implementing school-based design and construction of educational tool for use with the prevention program.
- Activities to be designed to suit each age group (i.e.children or youth) level of development and constructed to be use with other age groups and identified target groups.
  E.g. Picture drawing flip charts, posters, photo accounts of local risk factors verses local preventative actions, songs and jingles, and video
- Instigate education tool formation utilizing local area resources, community members and target children to promote ownership and sense of personal involvement in community.
- Collaborate with community teachers to facilitate scheduling of health promotion strategy into school program.
- Identify community members and service providers to be involved with program development, introduction, delivery and co-ordination.
  E.g. Aboriginal Health Workers, Environmental Health Officers, Sanitation and Waste Disposal Workers.

    - Assist and encourage community area excursions to identify and demonstrate hazards and causative factors.
    - Encourage target group involvement in established projects with objectives of improving Environmental Health issues.
- Facilitate community organization of presentation day for display of completed educational tools.
- Collaborate with community teachers to facilitate continued involvement of project, continued development and use of completed tools in school schedule.
- Encourage and support increased delivery of prevention education and use of developed tools to other community members.
    - Work with established community groups to assist in increasing scope of education distribution to other identified risk groups
    - Encourage incorporation into Antenatal education program to target infants and children unable to understand or access program by education of mothers, families and carers.

Objective 2: Establish sustainable development through partnership with the local community and involved health and environmental agencies.

Actions

- Develop a promotional education tool for community members outlining identified areas of need and causative factors associated with increased incidence of Gastroenteritis in young children.
- Encourage and assist the community to identify local risk factors and areas of need influencing health status of the target group children and the prevention of gastroenteritis.
- Collaborate with community council and nominated community members in the identification of available resources, cultural aspects and children's needs.
- Provide support and additional resources for the community to develop local objectives and assist in an informed decision making process.
- Promote involvement of all services and agencies in planning and implementation with the community.
- Facilitate open communication, regular meetings and feedback of progress to all involved community members and services.
- Develop an Evaluation tool to provide continuous assessment of the program, community involvement and health status of the target children group. Allowing implementation of change to identified areas of need and continued obtainment of objectives and expected outcomes.

Identified obstacles

The primary obstacles are:

- Available resources
- Access and isolation
- Community motivation
- Destruction of society, cultural and traditional family support structures due to alcohol, drugs, and poverty.

Difficulties associated with gaining access to isolated indigenous communities introduce many unique obstacles to change that are not faced by the mainstream Australian population. Not only geographical isolation, but also barriers and differences due to cultural aspects can prevent the successful introduction of strategies.

The objective of establishing local community involvement and the utilisation of existing resources assists in the process of introducing sustainable development and addresses the issue of ensuring cultural awareness. Community ownership and management of a program facilitates motivation and incentive for community members continued involvement and development. The target group of young children and youth will benefit from not only improved health with the reduction of gastroenteritis incidence but the provision of positive role models as elders and community adults remain active participants of health promotion strategies.

Living conditions and the breakdown of traditional family structures has lead to many deficits in education and development of the young community members. Children learn by observation and demonstration. Given the opportunity to be actively involved in developing educational tools to use within the community setting fosters pride and a sense of community support.

A hands-on approach to this strategy involving all perspectives of society and available services increases access to learning and the development of tools with which to address adult life. The process of reconstructing a healthy environment for future generations begins with the young of today learning the skills to improve and maintain the environment and health status of tomorrow.

Conclusion

Remote indigenous children remain at great risk from gastroenteritis and other WBI related to their environment and living conditions. The aim of targeting children and youth is to provide ground level development for future programs and community improvement. Education of the young has a positive impact on the development of adult life skills. Changing behaviour of children and youth today will provide the role models for following generations and will begin the cycle of environment protection and reduction of gastroenteritis.

Difficulty arose in the development of an original proposal due to the fact that as highlighted in background research, many initiatives have been instigated within remote Indigenous communities. In spite of these varied initiatives, the health status and conditions have not improved to acceptable levels. Research literature indicated that the success of any strategy is directly related to the willingness and extent of community involvement and use of a multidisciplinary approach throughout the process of development, implementation and evaluation. Without this process no strategy will be beneficial to the nominated target group.

Society without children is a society without hope. They are representatives of the future society and culture of our indigenous population and the Australian way of life as a whole. It is imperative that continued development is maintained regardless of the continual cycle of hazards and obstacles to improvement. Children cannot develop without appropriate role models and education. Therefore it is important that local, state and national objectives for health and environment remain adequately funded and have continued infrastructure development to provide future generations with the tools and skills to continually improve and develop away from the present inequities in health and levels of society within Australia today.

References

ABS - Australian Bureau of Statistics (2001) The Health and Welfare of Australian Aboriginal and Torres Straight Island people. ABS, Canberra, www.abs.gov.au.

Bauert PA, Brown NJ, Collins B and Martin CM (2001) Indigenous Australian children: educating for health. Medical Journal of Australia, 174: 488-489, www.mja.com.au.

Commonwealth Department of Health and Aged Care (1999) Hospital Casemix data and the health of Aboriginal and Torres Strait Islander peoples. Commonwealth Department of Health and Aged Care, Canberra.

Corvalan CF, Kjellstrom T and Smith KR (1999) Health, environment and sustainable development: Identifying links and indicators to promote action. Epidemiology, 10:656-660.

EnHealth Council (2000) The National Environmental Health Strategy Implementation Plan. Commonwealth Australia, Canberra, www.health.gov.au/pubhlth/publicat/document/metadat/envstrat_imp.htm.

Environmental Health Strategy Submission (1998) National Aboriginal Community Controlled Health Organisation. July 1998, www.healthinfonet.ecu.edu.au.

Health Department of Western Australia (1997) Environmental Health for Aboriginal communities: A training manual for Environmental health workers. Office of Aboriginal Health, Health Department of Western Australia, Perth.

Lawson J and Close G (1994) New Public Health approaches among isolated rural Aboriginal communities in New South Wales. Aboriginal and Torres Strait Islander Health Information Bulletin, 19 Dec: 25-35.

The National Environmental Health Strategy (1999) www.nphp.gov.au.

Queensland Health (1998) Challenge – Better health for indigenous Queenslanders. Queensland Health. www.health.qld.gov.au.

Queensland Health (1999) Towards… A Queensland Aboriginal and Torres Strait Islander Environmental Health Strategy. A Scoping paper. Environmental Health Unit, Queensland Health, Brisbane. www.healthinfonet.ecu.edu.au

Queensland Health (2001) Integrated planning, monitoring and reporting System (IPMRS). Public Health Services, Queensland Health, Brisbane. http://qheps.health.qld.gov.au/phs/masters/ms/ipmrs/Levels_of_planning.htm.

WHO (1996) Water and Sanitation Fact Sheet No 112. www.lifewater.org/fact112.htm.

