Research to policy and action

The case of vitamin A in South Africa

Technical report

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Abbreviations

ANC	African National Congress
ARI	Acute respiratory illness
CBO	Community-based organisation
CIC	Conjunctival impression cytology
COHRED	Council on Health Research and Development
CSIR	Council for scientific and industrial research
CRC	Convention on the Rights of the Child
CHW	Community health worker
DHS	District health system
DOH	Department of Health
ENHR	Essential national health research
GEAR	Growth, employment and redistribution
HIV	Human immunodeficiency virus
IVACG	International vitamin A consultative group
IMCI	Integrated management of childhood illness
IMS	Integrated morbidity score
INS	Integrated nutrition strategy
INP	Integrated nutrition program
KZN	KwaZulu Natal
LBW	Low birth weight
MINMEC	Ministerial forum. Sectorally based meetings of national ministers and provincial members of the executive council
MTCT	Maternal to child transmission
NGO	Non-governmental organisation
NP	National Party
NPA	National plan of action for children
PHC	Primary health care
PPC	Parliamentary portfolio committee
RDP	Reconstruction and development program
RE	Retinol equivalents
SA	South Africa
SANGOCO	South African non-government organisation coalition
SAVACG	South African vitamin A consultative group
SCN	Sub-committee on nutrition of the United Nations
TB	Tuberculosis
UN	United Nations

UNICEF	United Nations Children Fund
USAID	United States agency for international development
VAD	Vitamin A deficiency. Marginal vitamin A deficiency = serum vitamin A level < 20ug/dl.
VAS	Vitamin A supplementation
WHO	World Health Organisation

Executive summary

Background to the case study

Despite the considerable resources spent on health research, little attention has been paid to the application of research results to the improvement of health. The Council on Health Research for Development's (COHRED) "Research to Action" Working Group aims to develop mechanisms to improve the transfer of research findings to evidence-based action. Country case studies have been commissioned in an effort to gain greater understanding of the potential for such transfer.

Vitamin A and public health

Severe Vitamin A deficiency has long been recognised as a leading cause of childhood blindness. There is also an extensive body of evidence, which attests to the strong association between marginal vitamin A status and poor growth, an increase in the incidence and severity of infections, and excessive childhood mortality. In South Africa, there is a significant problem of marginal Vitamin A deficiency.

The policy framework

Recognising that good nutrition is a human right, and that nutrition is also an important mediator for promotion of human development, the framework adopted for this study locates integrated health and nutrition policy in a social development and human rights context. Within this framework, policy actions are defined for different levels of intervention. These levels include the following: *Population-oriented promotion and prevention; management of sick children; delivery of health and nutrition services; health system; social and economic development and promotion and protection of human (including child) rights.*

Aim and objectives

The overall aim of the study was to explore the potential for reducing the schism between research and policy.

Objectives

To:

1. describe the context in which vitamin A interventions and policies are being developed
2. review national research on vitamin A interventions
3. analyse vitamin A related policies
4. assess the extent to which policy has been influenced by research-generated evidence
5. generate a list of unresolved issues which require further investigation
6. make recommendations for the improvement of the research-policy-action linkage

Methods

The research-policy context

This section was developed by a review of documents.

Review of vitamin A research

Vitamin A research conducted in South Africa during the period 1985 – 1999 was identified by conducting a "Medline" search, reviewing bibliographies of research publications, contacting universities (departments of paediatrics, dietetics, community health, infectious diseases), research institutions, the South African Vitamin A Consultancy Group (SAVACG) and Schools of Public Health. Research identified was critically appraised and where necessary, researchers were contacted to provide further information.

Analysis of vitamin A related policies

Relevant nutrition policies were obtained from the national and provincial departments of health. Policies were reviewed focussing mainly on the process followed in developing the policy, factors that influenced policy development and the use of research in policy development.

Assessing the extent to which research influences policy

Semi-structured key informant interviews were conducted with relevant role-players. The interviews focused mainly on the role of the organisation /individual with regard to vitamin A research and policy in SA, strategies used by the organisation/individuals, barriers to research-policy-action and mechanisms for improving the research-policy-action connection

Results

The research-policy-context

In 1948, South Africa's National Party passed legislation to entrench the apartheid ideology. This resulted in a set of laws and policies, which systematically discriminated against those who were black, while entrenching social and economic advantage for those who were white. The key characteristics of this era were **fragmentation** and **inequity**, which were manifest in all aspects of life, and for all sectors.

In 1994, following months of negotiation between the ruling government and the mass democratic movement South Africa held its first democratic elections. This ushered in a new social order in which apartheid was abolished. The new democracy gave way to a constitution in which respect for human rights was entrenched (SA Constitution, 1997), and to the adoption of a social and economic development plan aimed at redressing inequity. Two areas of the new order are relevant to the topic under review:

- Commitments to children and their rights
- Restructuring of the development and health sectors

Commitments to children and their rights

The new government made a number of commitments to children. These included:

- Ratification of the Convention on the Rights of the Child;
- Enshrinement of the rights of children in the South African Constitution;
- A commitment to the principle of a "first call for children" in South Africa's reconstruction and development plan;
- Creation of a structured National Plan of Action (NPA) for children; and
- Establishing a dedicated focus, the Joint Parliamentary Committee on Children, Youth and disability, for directing the attention of the South African parliament to the rights and needs of children.

These actions signaled the intention to give priority to children in all government policies and programs, and to strive to attain the national development goals of equity.

In the restructuring of social and economic development, the health sector was given special attention, and nutrition was identified as a focus. The intentions for the new health system are outlined in the government's White Paper for transformation of the health system (DOH, 19997).
South Africa has adopted the primary health care philosophy,[1] with a focus on decentralization and delivery through the district health system, and consultation and participation by communities. An integrated package of essential services is to be made available to the entire population. An essential national health research (ENHR) strategy has been adopted.

South Africa's new Constitution makes provision for 3 spheres of governance - national, provincial and local – each of which has legislative power and discrete responsibilities. In the health sector's transformation plan, three levels of policy responsibility are identified: the *national* department provides leadership in the formulation of national health policy and legislation; the *provincial* health department promotes and monitors the health of the people in the province, while developing and supporting an effective provincial health system; and the *district* health system plans and manages all local health services for a defined population.

Vitamin A related research, 1985 - 1999

Research questions were largely formulated on the basis of the researcher's experience, on hypotheses, or on findings in published literature. Research outputs were disseminated mainly through peer-reviewed publications. Although most studies did include recommendations for action, only 4 of the studies provided information on how the recommendations could be implemented. Interestingly, these were the 4 studies in which decision – makers were actively involved in the research.

[1] As enunciated in the Declaration of Alma Ata (1979)

Policies related to Vitamin A interventions

Process of nutrition policy development

Prior to 1994 nutrition policies and programs were fragmented and failed to address the basic and underlying causes of malnutrition. Recognizing that addressing malnutrition is a priority for human development, one of the appointments of the Minister of Health in the earliest days of South Africa's new democracy was a Nutrition Committee, charged with the responsibility of developing an integrated nutrition strategy for the country (DOH, 1998). The strategy recommended by the committee was adopted in the Department of Health's White Paper on the transformation of the health system in SA, and provides a framework for implementing its different policy components. The integrated nutrition program (INP) (DOH, 1998) was based on consultation with a variety of stakeholders, and formulated on evidence from research undertaken in South Africa and elsewhere. Its aim is the improvement of the nutritional status of all South Africans, and one of its focus areas is **micronutrient deficiencies**.

Key issues that contributed to vitamin A being put on the agenda

In 1993, the South African Vitamin A Consultative Group was established with the aim of assessing vitamin A deficiency in SA. In 1994 SAVACG conducted the first ever national survey and documented the vitamin A status in children aged 6 – 72 months (SAVACG 1996). The survey found that 33% of young children had Vitamin A deficiency (serum vitamin A levels < 20ug/dl). According to international criteria this study identifies SA as having a **serious** public health problem of vitamin A deficiency.

Initiation of Vitamin A policies: the role of research

In 1997, the country's first national Vitamin policy (DOH 1997) was developed by the National Nutrition Directorate. The draft Vitamin A supplementation policy has recently been submitted to the new Minister of Health and was endorsed at the time of writing this report.

At a provincial level however, there has been general dissatisfaction with the supplementation policy remaining at draft status for such a length of time and most provinces had in the interim either drafted or were in the process of drafting their own provincial supplementation policies. There is however no uniformity in the various provincial policies.

Food Fortification Policy: the role of research

Although there is currently no written food fortification policy, the Department of Health signaled its intention to formulate a policy by appointing a food fortification task team consisting of representatives from the food industry, research institutions, academic units, professional societies and other departments in 1997. In terms of food fortification there are several opportunities for research to accelerate implementation of the food fortification policy.

Policies governing clinical management of sick children

On the basis of extensive evidence of the extent to which Vitamin A ameliorates the severity of manifestations of infections, in general, there are widespread recommendations for clinical practice guidelines for the management of children with respiratory infections to include therapeutic doses of vitamin A.

Thus the policies which govern the management of micro-nutrient deficiency have been broadly based on research evidence, but there is much research that needs to be undertaken to ensure their successful implementation, and to assess the impact of such interventions on the overall status of micro-nutrient deficiency and its sequelae.

Research influencing policy

Researcher issues

The main constraints facing researchers include:

- The limited time and resources available to follow up on research recommendations.
- The main criterion used in performance appraisal is research output in terms of publications. Only recently have some academic and research institutions incorporated other criteria into performance appraisal.
- Interaction with policy-makers

⇒ Tendering system. Researchers felt that often the cheapest is viewed as best.

⇒ Department of Health is viewed as having a poor infrastructure for quick response in terms of research support.

⇒ The administrative system is regarded as slow and inhibitory.

⇒ There is an over-reliance by the DOH on external advisors – often results in researchers not being heard.

Researchers also expressed disappointment and disillusionment regarding the fact that the vitamin A supplementation policy, drafted in 1997, was only endorsed by the Health Ministry in 2000.

Other issues identified as impacting on the research-policy connection include:

- Research is just one factor in policy development. Often other factors are stronger in influencing action e.g. public demand.
- Political pressure – decision-makers often have little time to pause to consider research results.
- Hostile policy environment in which public demands for particular services are great and in which decision-makers face severe budgetary constraints.

Opportunities for dialogue between researchers and policy makers

The DOH has recently established a Nutrition Research Forum to attempt to create a meeting place for researchers and policy makers in the nutrition field. Researcher's also expressed the need for a forum in which research issues facing all researchers (not just nutrition researchers) could be discussed.

Policy-makers/decision-makers

Decision-makers commented that their involvement in research activities is a relatively new experience. **The main constraints experienced by decision-makers include:**

- A lack of understanding, by researchers and others, of the health systems and of policy process.
- Research recommendations that are often unrealistic, include too few options, a long “shopping list” of recommendations that appears to further the interests of researchers.
- Research reports often look good but are difficult to read.
- High staff turnover and change in staff positions at the DOH impacts on planning and management of all programs.
- Provincial decision-makers have been constrained because of the absence of a final national vitamin A supplementation policy.

Industry

The vitamin A industry played an important facilitatory and funding role in the establishment of the SAVACG, which led to the first national vitamin A survey being conducted.

The milling industry has expressed concern regarding the cost of the fortificant, particularly since the maize meal consumption curve is flat and that of wheat consumption decreasing. The milling industry is also concerned about the DOH's capacity to enforce a food fortification policy.

International agencies

Since 1994 there has been an increased international agency activity in SA. UNICEF is one international agency that has played an important role in terms of vitamin A policy and research in SA (UNICEF, 1998). One of UNICEF's priority areas is the improvement of the micronutrient status of SA children. To this end UNICEF has worked closely with the DOH and other role-players in SA. Key strategies used by UNICEF include:

support of consensus building activities
technical assistance
research support
exposure to international best practice.

All of the above strategies have included the principle of building local capacity.

Research to policy and action in an emerging democracy

In a period of radical government change as has been experienced in SA it is critical that managers are skilled in change management. Researchers and civil servants also need to be made more aware of the complexity of the change process.

In South Africa the new Government placed great emphasis on consultation, transparency civil involvement in policy development. However lack of prior experience with the policy making process results in less interaction or involvement in policy development.

Staff movement into and within the health system has important planning and training implications.

Utilization of research findings cannot be seen in isolation. Action is dependent of many other factors.

Improving the research-policy-action linkage

The following recommendations are made with regard to improving the research-policy-action linkage.

1. Increasing opportunities for dialogue between policy and researchers.
2. Establishment of a research forum where issues facing researchers can be discussed
3. Establishment of research advocacy bodies to promote uptake of research.
4. Addressing capacity development with regard to:
   - Policy research
   - Policy process
   - Research synthesis
   - Systematic reviews
   - Health systems research
   - Economic research
   - Research communication
   - Understanding and utilizing research
   - Understanding the political context
   - Policy communication
5. Improving research administrative support within the DOH.
6. Increased incentives to undertake health systems, economic and policy research, promotion of research results, monitoring of the research-policy- action process, research communication strategies.

The research–policy-action connection is a complex one. A newly emerging democracy presents unique opportunities and challenges in improving the research-policy linkage.

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Technical report

1. Background to the case study

Despite the considerable resources spent on health research, little attention has been paid to the application of research results to the improvement of health (Adibo M 1996, Davis P 1996, Haines A 1998, Trostle J 1999). The Council on Health Research for Development's (COHRED) "Research to Action" Working Group aims to develop mechanisms to improve the transfer of research findings to evidence-based action. Country case studies have been commissioned in an effort to gain greater understanding of the potential for such transfer.

The case study is a research method, which focuses on the circumstances, dynamics and complexity of a case. As such, it is a valuable method for the study of complex social settings, and for generating hypotheses.

To contribute to our understanding of the research-policy-action linkage a South African case study of vitamin A research, and its linkage to related policy and actions was undertaken.

2. Vitamin A and public health

Severe vitamin A deficiency has long been recognised as a leading cause of childhood blindness (WHO,1976). Although this is a serious preventable condition, the impact of marginal deficiency on child health has even greater global significance (Sommer A 1990).

There is an extensive body of evidence which attests to the strong association between marginal vitamin A status and poor growth, an increase in the incidence and severity of infections, and excessive childhood mortality (Sommer A 1983, Fawzi W 1993, Glazio P 1993). Marginal vitamin A status is widely recognised as a major public health problem in developing countries (WHO/UNICEF, 1994). The recent XIX International Vitamin A Consultative Group Conference - held in Durban, South Africa - concluded that " Vitamin A remains a serious public health and development problem which deserves continued attention and advocacy at all levels" (IVACG, 1999).

In South Africa, there is a significant problem of marginal vitamin A deficiency. This case study will aim to illustrate the extent of the problem, and the potential for intervention at different levels of health policy.

3. The policy framework

Recognising that good nutrition is a human right, and that nutrition is also an important mediator for promotion of human development, the framework adopted for this study locates integrated health and nutrition policy in a social development and human rights context. Within this framework, policy actions are defined for different levels of intervention.

These levels include the following:

- *Population-oriented promotion and prevention*
  At this level, policies focus on health promotion and prevention actions directed at whole populations or communities.

- *Management of sick children*
  At this level, policy guidelines are needed for the clinical care of individual children who are sick, one example of which is the integrated management of childhood illnesses (IMCI).

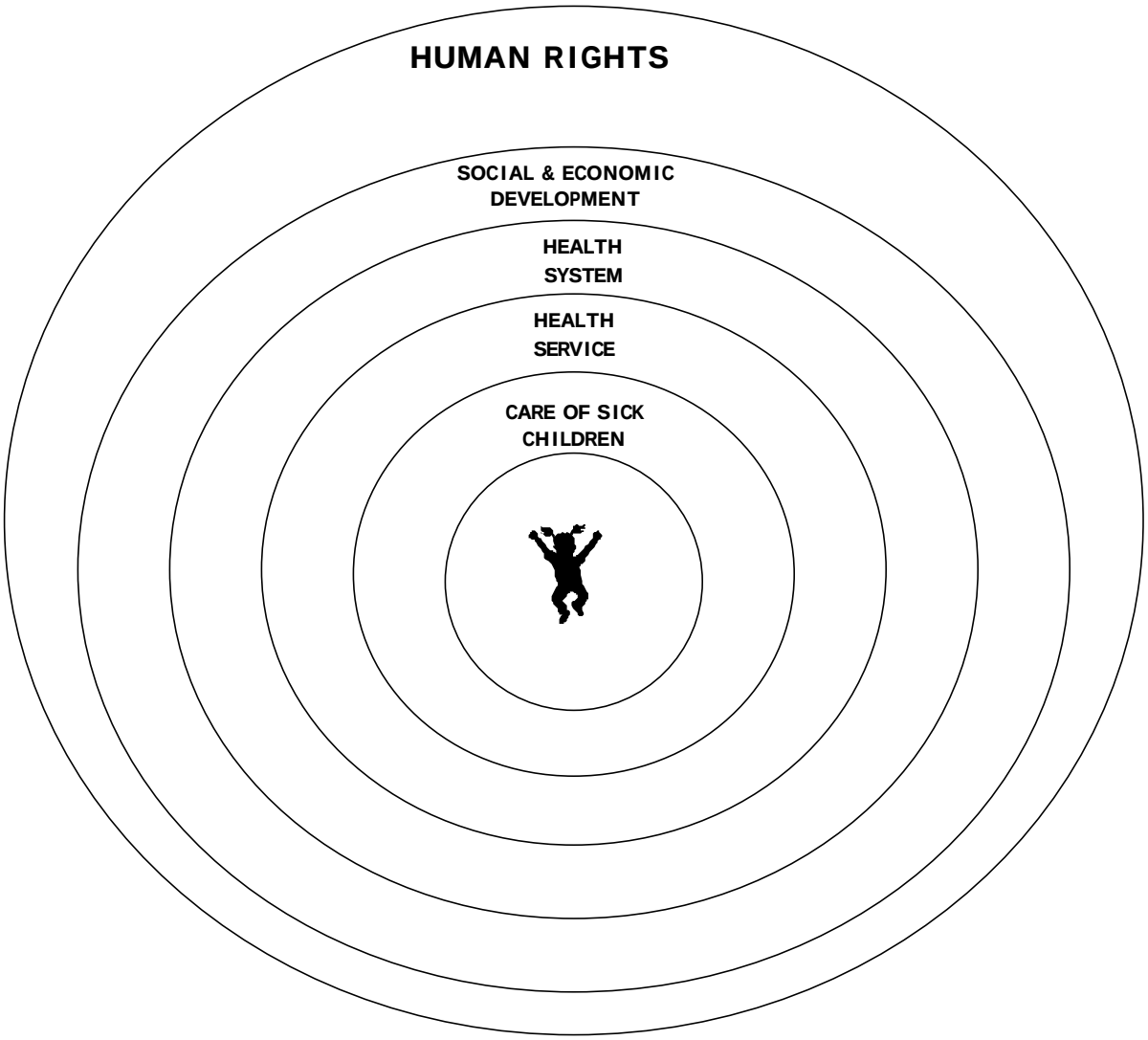
- *Delivery of health and nutrition services*
  At this level, policies govern the content and delivery of health and nutrition services.

- *Health system*
  At this level, policies determine the structure, organisation and financing of the health sector

- *Social and economic development*
  At this level, policies determine the nature of social and economic development programmes

- *Promotion and protection of human (including child) rights*
  At this level, policies are formulated around the promotion and protection of human rights, and child rights in particular.

Figure 1: The policy framework



4. Aim and objectives

The overall aim of the study was to explore the potential for reducing the schism between research and policy by examining the gap between research and policy action at every level of the integrated policy framework as described.

While the enquiry focused on the vitamin A policies governing health promotion and prevention, management of ill-health and vitamin A as a component of a population-focused integrated nutrition programme, some attention is paid to nutrition services and nutrition as an issue of development, and also as a human right.

Objectives

1. To describe the context in which vitamin A interventions and policies are being developed
2. To review national research on vitamin A interventions
3. To analyse vitamin A related policies
4. To assess the extent to which policy has been influenced by research-generated evidence
5. To generate a list of unresolved issues which require further investigation
6. To make recommendations for the improvement of the research-policy-action linkage

5. Methods

1. Describing the context

This section of the study was undertaken by review of a wide range of documents related to South Africa's history and transformation, and the restructuring of the health sector within this.

2. Review of vitamin A research

Vitamin A research conducted in South Africa during the period 1985 – 1999 was identified as follows:

- A “Medline” search focusing on South African nutrition studies was conducted.

- Bibliographies of research publications were searched to identify further research undertaken during this period.
- Non-peer reviewed literature was identified by contacting Universities (departments of paediatrics, dietetics, community health, infectious diseases), research institutions, the South African Vitamin A Consultancy Group (SAVACG) and Schools of Public Health for information on Vitamin A research.

The research studies were reviewed with a focus on:

- Aims and objectives of the research
- Focus of the research, viz. assessment of Vitamin A status, analysis of the causes of deficiency, interventions
- Scientific validity
- Main findings
- Recommendations
- Involvement of policy decision makers in the research process
- Methods used to disseminate research findings.

The process adopted was documentary review, and where necessary, researchers were contacted to provide further information.

3. Analysis of vitamin A related policies

Relevant nutrition policies were obtained from the national and provincial departments of health. Policies were reviewed focussing on:

- Stage of policy (final, draft)
- Aims and content of the policy
- Process followed in developing the policy
- The use of research in policy development
- The policy content.
- Current status of the policy
- Factors that influenced policy development

4. Assessing the extent to which research influences policy

Semi-structured key informant interviews were conducted with

⇒ policy and decision makers at various levels
⇒ researchers
⇒ research institutions
⇒ academics
⇒ funders
⇒ the vitamin A industry.
⇒ the maize and wheat industry
⇒ international agencies

The interviews focused on

- the role of the organisation/individual with regard to Vitamin A research and policy in SA
- involvement in research and/or policy development
- the values, practices and beliefs of the individuals/organisations
- strategies used by the organisation/individuals
- constraints faced in
- research gaps
- barriers to research-policy-action
- mechanisms for improving the research-policy-action connection

6. Results

Results have been presented using the following sub-headings:

6.1.The research-policy context
   a) chronology of significant events related to vitamin A policy
   b) the health sector under apartheid
   c) health sector restructuring under the new government
   d) the policy-making process in South Africa
   e) key role-players in vitamin A interventions

6.2. Vitamin A related research in SA (1985-1999).

6.3. Policies related to vitamin A interventions.

6.4.The extent to which research influences policy.

6.1. The research-policy context

The period under study (1985-1999) covers an interesting time in South African history – a period during which there was a change from the government of apartheid[2] to the first democratically elected government.

This section describes:

a) chronology of significant events related to vitamin A policy
b) the health sector under apartheid
c) health sector restructuring under the new government
d) the policy making process
e) key role-players in vitamin A interventions.

[2] A system of legislated political and economic discrimination against black South Africans

a) Chronology of significant events related to the context of vitamin A policy and research

Table 1: 1985 – 1993 South Africa under apartheid regime

Health context	Vitamin A research in SA	Key vitamin A policies, programs and events	Key political events
• Key characteristic of health services was inequity. • Health system biased toward curative-hospital based care. • Centralized decision-making. • Research bias toward biomedical research. Little health systems research undertaken (Kaiser Family Foundation 1991, HST SAHR 1996, 1997,1998, 1999).	• Local studies indicate marginal VAD among pre-school children (Hill J, 1988, Coutsoudis A 1993). • VAS decreases the morbidity and mortality associated with measles (Hussey G 1990, Coutsoudis A 1991). • VAS of babies born to HIV positive mothers associated with decrease morbidity particularly for diarrhea (Coutsoudis A 1995).	• No comprehensive nutrition program in SA. • 1989 Bellagio Declaration on Overcoming Hunger and 1990 World Summit for Children both call for the worldwide control and virtual elimination of VAD (Hussey 1992a). • 1992 Bellagio conference concludes that VAD associated with an increased morbidity and mortality (Hussey 1992a). • In 1992 SAVACG formed with the goal of assessing VAD in SA (Hussey G 1992b).	• NP ruling party since 1948. • International sanctions against SA are intensified. • Increasing protests within the country against apartheid. • 1989 – President De Klerk came into office. • 1990 - The ANC, PAC and Communist Party are unbanned. • Nelson Mandela is released from prison. • 1990-1994 Negotiations for a new South Africa

Table 2: 1994 – 1999 new democracy in South Africa

Health context	Vitamin A research in SA	Vitamin A policies, programs and events	Key political events
• Government makes commitments with respect to children improving the well being of children. • Key components of the health reform include the adoption of the PHC approach and establishment of a DHS (DOH 1997) • ENHR strategy is adopted and ENHR committee appointed in 1995 DOH 1997. • Macro-economic policy adopted – GEAR (Department of Finance 1996	• 1994 first national vitamin A survey is conducted (SAVACG 1996). • 1995 SAVACG results show that 33% of pre-school children have marginal VAD • Supplementation of HIV positive mothers associated with decreased diarrhea morbidity in children (Coutsoudis A 1995) • High dose vitamin a can be given enterally to LBW babies (Coutsoudis A 1996). • VAD is associated with severity of ARIs Dudley L 1997). • Provision of a vitamin A fortified biscuit can decrease in VAD from 39% to 12 % (van Stuijvenberg 1997) • 54% of school children have marginal VAD (Sickle 1998) • Economic evaluation – cost of supplementation R 16 million (Hendricks M). • Vitamin A does not decrease MTCT (Coutsoudis A 1999) • With regard to food fortification: ⇒ Food fortification survey conducted in 1999. ⇒ Organoleptic study conducted commissioned. ⇒ Social market research commissioned.	• Integrated nutrition strategy (INS) is endorsed (DOH 1997a). • INP, the implementation framework for the INS, is drafted (DOH 1997b) • Draft vitamin A supplementation policy developed (DOH 1997c) • VACG conference held in Durban (IVACG 1999). • Focus on activities related to food fortification • IMCI "policy" approved by MINMEC	• First democratic elections held in 1994. • President Mandela becomes first democratically elected president. • 1996 SA adopts its new constitution. • 1999 2nd democratic election • President Mbeki is elected as state president.

(b) Health under apartheid

In 1948, South Africa's National Party passed legislation to entrench the apartheid ideology. This resulted in a set of laws and policies which systematically discriminated against those who were black, while entrenching social and economic advantage for those who were white. The key characteristics of this era were **fragmentation** and **inequity**, which were manifest in all aspects of the political and economic infrastructure, and for all sectors.

Health system

In the health sector, the consequences of apartheid policies were pervasive, resulting in an unwieldy management structure with different health departments, defined by "race" or population groups. Furthermore, the former system of relegating Africans to tribal trust lands or "homelands" resulted in ten homelands that were "independent" of the other provinces of South Africa. With a separate semi-autonomous ministry of health for each homeland, there were 17 different health departments in the country.

Health services

Under these circumstances, management was chaotic, and health services were grossly inequitable. There was a marked disparity in per capita expenditure on health by race, or population group, and it was estimated that more than 60% of the total health care budget was expended in the private sector, which was used by the less than 20% of the population (HST 1999). Limited resources available in public health sector were disproportionately allocated to urban areas, and within these, to expensive highly specialized curative services.

Health research

Research efforts followed a similar line, with emphasis placed on biomedical research related to those "first world" problems as determined by the interest of researchers, and which were of concern to the white majority. South African biomedical research was lauded by the international medical scientific community, and in 1987 SA was ranked 12th in the world in terms of scientific publications (Kaiser Family Foundation 1991). Of less concern and interest, however, was the impact of the research on the health of the

majority, and the potential for research into health systems and health policy.

From 1969, the major health research institute in the country was the government-funded Medical Research Council. Although the MRC had largely focused on laboratory and clinical research, from the early 80's attention started being paid to public health research, and later a special program for health systems research was initiated (MRC 1999). In 1992, at a time when a new political order was being negotiated, the National Trust for Health Systems Research and Development was established. Supported by government, as well as a number of international donors, one of its major aims is to develop capacity in health systems research, planning, development and evaluation. These two foci for health systems research, created in the final years of the apartheid order, have provided a site of interest in this area of research, and have promoted researcher efforts to link research to health service policy and action.

Impact of apartheid on child health and nutrition

The impact of apartheid on child health is reflected in the difference in infant mortality rate for the different populations groups: White 11.9, Coloured 46.3, Asian 19.0 and African 80.0/1000 live births (Kaiser Family Foundation 1991). During the apartheid period the nutritional status of children was only documented in occasional surveys. Available data however does show the stark difference in nutritional status between the different population groups (e.g. the proportion of children with wasting according to the different population groups: White children 6.6%, Coloured 16.8%, Asian 11.4% and African 25.5%) (H Vorster, 1996).

c) Health sector transformation under the new government (1994-1999)

Establishing the new order

In 1994, following months of negotiation between the ruling government and the mass democratic movement, including the organizations of the liberation movement, South Africa held its first democratic elections. This ushered in a new social order in which apartheid was abolished. The new democracy gave way to a constitution in which respect for human rights was entrenched (SA Constitution, 1996), and to the adoption of a social and economic development plan aimed at redressing inequity.

Two areas of the new order are relevant to the topic under review:

- Commitments to children and their rights
- Restructuring of the development and health sectors

Commitments to children and their rights

The new government made a number of commitments to children. These included:

- Ratification of the Convention on the Rights of the Child;
- Enshrinement of the rights of children in the South African Constitution;
- A commitment to the principle of a "first call for children" in South Africa's reconstruction and development plan;
- Creation of a structured National Plan of Action (NPA) for children; and
- Establishing a dedicated focus, the Joint Parliamentary Committee on Children, Youth and disability, for directing the attention of the South African parliament to the rights and needs of children.

These actions signaled the intention to give priority to children in all government policies and programs, and to strive to attain the national development goals of equity.

South Africa adopted the CRC as the child rights instrument for South Africa, and included a special focus on children in the South African Constitution. It gave impetus to these commitments by creating the national plan of action for children, which lists virtual elimination of vitamin A deficiency and its consequences as one the major nutrition goals to be

achieved in fulfilment of several articles of the Convention on the Rights of the Child (CRC). [3]

In its first report to the UN Committee monitoring progress with implementation of the CRC, South Africa cites child malnutrition as an issue of special concern for child rights, and identifies micro-nutrient interventions (including a national food fortification plan) as key components of the integrated nutrition strategy to address this problem.[4] This theme is picked up in the supplementary report[5], in which vitamin A deficiency is mentioned as a specific priority. The Constitutional provisions regarding rights pertaining to food security and nutrition include the right of access to sufficient food[6], and places an obligation on the State to ensure that every child has adequate food[7].

This reporting clearly identifies vitamin A deficiency and nutrition as human rights issues, and calls for exploration of the research potential to be harnessed in support of promoting these human rights.

Recognition of the human right to food[8] is highlighted by the United Nations' Sub-Committee on Nutrition (SCN) publication of a special session of the SCN convened in July 1999, at which a plea was made for the development of indicators of human rights pertinent to nutrition.

Reconstructing development

In the restructuring of social and economic development, the health sector was given special attention, and nutrition was identified as a focus. Noting that meeting basic needs is a priority for the development of the nation, the reconstruction and development plan (RDP) makes a commitment to ensuring that every person gets their daily nutritional requirement (ANC 1994).

To give effect to these commitments, the RDP commissioned a situation analysis of children in South Africa (RDP office, 1996). Using a process of

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[3] Convention on the Rights of the Child Articles 3, 16, 17, 24, 26 and 27
[4] Initial Country Report: Convention on the Rights of the Child, South Africa, November 1997
[5] Implementation of the Convention on the Rights of the Child: South Africa's Supplement to the Initial Country Report, January 2000
[6] Section 27(1)b, Act 108 of 1996
[7] Section 28(1)c and 35(2)e, ibid
[8] Adequate Food: A Human Right, SCN News No 18, July 1999

secondary research and review of existing data and reports, the research team identified a number of issues worthy of attention in efforts towards fulfilling the rights of South Africa's children. On this basis, they proposed a list of key performance indicators for monitoring progress toward the goals for children and development within the RDP framework. One of these is the "virtual elimination of vitamin A deficiency by 2000 (At least 80% of all children under 24 months of age in areas with vitamin A deficiency receive adequate vitamin A)

This very explicit goal from the RDP was laudable, but clearly not attainable within the time period of three years.

Restructuring the health sector

The intentions of the RDP were further elaborated on in the government's White Paper for transformation of the health system (DOH, 19997).
Key goals and objectives for health sector restructuring include:

- Unification of fragmented health services at all levels into a comprehensive and integrated national health system;
- To promote equity, accessibility and utilization of health services;
- To extend the availability and ensure the appropriateness of health services;
- To develop health promotion activities;
- To develop human resources available to the health sector;
- To foster communication participation across the health sector; and
- To improve health sector planning and the monitoring of health status and services.

South Africa has adopted the primary health care philosophy.[9] There is to be a focus on decentralization and delivery through the district health system and consultation and participation by communities. An integrated package of essential services is to be made available to the entire population. An essential national health research (ENHR) strategy has been adopted.

A newly published set of norms of standards for the South African primary health care package (DOH, 2000) lists elimination of micro-nutrient deficiency disorders as a norm in the provision of services for integrated management of childhood illness. However, there are no complementary

[9] As enunciated in the Declaration of Alma Ata (1979)

standards (such a drugs, skills, references and educational materials), and this offers an opportunity to research, implement and evaluate a package of essential nutrition interventions, including micro-nutrients.

(d) The policy process in the new South Africa

South Africa's new Constitution makes provision for 3 spheres of governance - national, provincial and local – each of which has legislative power and discrete responsibilities.

National policy is made at national level by Cabinet Ministers appointed by the President to serve as the political heads of the various government departments.

In developing national policy, the responsible Minister usually appoints a task team, which is charged with wide consultation towards development of policy proposals. The extent to which Ministers and task teams either utilize or commission research to inform the development of their policy proposals is variable.

Each government department also has a parliamentary portfolio committee (PPC), comprised of elected members of parliament. This committee discusses proposed legislation and policy, holds the government accountable for its annual budget and expenditure, and takes into account the views of the public. One mechanism to elicit information and opinion is through public hearings or requests for submissions, and the committee can also call upon Ministers and officials from state departments to report on their work. Further, the PPC has researchers available to them.

Since 1994 the committee meetings have been open to the public. Although committees have a vital role to play in terms of promoting involvement in policy-making in Parliament, the process of being involved in policy making is new for both the majority of the most civil servants, and also the wider public. There is a lack of knowledge and experience, and while structures may be in place to allow for greater public involvement, in reality it will take some time before there is true public involvement in policy making.

In the health sector's transformation plan, three levels of policy responsibility are identified:

The *national* department provides leadership in the formulation of national health policy and legislation; the *provincial* health department promotes and monitors the health of the people in the province, while developing and supporting an effective provincial health system; and the *district* health system plans and manages all local health services for a defined population.

The plan devotes a chapter to nutrition, and while making reference to data from a national survey on vitamin A, makes no specific mention of a national vitamin A policy.

(e) Key role players in vitamin A interventions

In the translation of research to implementation there are a number of role players. These include researchers (based at research institutes, academic centers, NGOs and the private sector); policy makers; health service managers; health service providers; the vitamin A industry, the food industry, the academic community and international agencies.

The interrelationship between role-players is influenced by the context in which they are situated. The changes occurring in SA are radical and have influenced the interrelationship between the role-players. Some examples of relevant context variables that have undergone radical change include: the levels of research support, the power and prestige of the scientific community, the involvement of international agencies in research and policy development, the political climate, economic stability, decentralization and the re-organization of health services. An analysis of the research-policy nexus needs to consider this dynamic changing context in which the role-players are operating.

This brief overview of South Africa's political evolution, and the description of the policy-making process provides some background to the environment within which Vitamin A policies have been developed, and in which vitamin A research has been undertaken.

6.2. Vitamin A related research, 1985 - 1999

For the period under review, a total of 40 local studies were identified. Research reports or publications were available for 25 of these, abstracts for only 8 studies, and for 7 of the studies no written report or abstract was available. The 7 studies not reviewed were either being written up; submitted for publication, or were not available.

Table 3 provides a descriptive summary of the studies reviewed, and attempts to organize the studies *within the policy analysis framework adopted for the review.*

- Studies that establish vitamin A status as a basis for development of national policy
- Studies that focus on preventive and promotive strategies
- Studies that focus on vitamin A in the management of sick children
- Studies that focus on vitamin A as a component of the national nutrition program

Table 3: Descriptive summary of local vitamin A research

Main author	Aim	Study design	Main findings	Other comments
Studies that establish Vitamin A status as a basis for development of national policy				
Bucher PI 1988	To assess the prevalence and causes of blindness in the Elim district.	Cross-sectional	Prevalence of blindness - 0.57%. Causes of blindness: senile cataracts (55%), trachoma (10%). 2.75% of all blindness due to Vitamin A deficiency.	None
Hill JC 1989	To establish the prevalence of external eye diseases in Transkei.	Cross sectional	0.58% of children under the age of 15 years had xeropthalmia. 11.7% of total population had climatic droplet keratopathy	Young anxious children not examined with slit lamp.
Coutsoudis A 1992	To determine daily intake of vitamin A amongst pre-shool children in Umlazi.	Cross sectional	Mean dietary intake of vitamin A (916 RE) was adequate.	Study used a 7-day recall dietary questionnaire and locally specific food consumption tables.
Coutsoudis A 1993	To test the hypothesis that pre-school children in informal settlements have sub-clinical VAD.	Cross sectional	Mean serum retinol 0.73 umol/l, 5% of the children were VAD.	Conjunctival impression cytology (CIC) test used. Study showed poor correlation between CIC and serum retinol threshold of deficiency.

Main author	Aim	Study design	Main findings	Other comments
Studies that establish Vitamin A status as a basis for development of national policy continued….				
Coutsoudis A 1994	To assess the nutritional status of pre-school children aged 3-6 years in an informal urban area.	Cross sectional	44% children low serum retinol levels, 21% anemic, 27% stunted 13% underweight.	Study confirms the co-existence of VAD and anemia.
Dhansay A 1994	To determine the plasma vitamin A levels in children aged 0-2 years attending a well-baby clinic.	Cross sectional	12% of children had marginal VAD	Review based on abstract only.
SAVACG 1996	To establish vitamin A, Fe, anthropometric and immunization coverage in children aged 6-71months.	Cross sectional	33% children had marginal VAD, 20% had anemia and 1 in 4 children were stunted.	First national vitamin A survey.
Sickle 1998	To determine vitamin A status of school children.	Cross sectional	54% children had marginal VAD.	Poor response rate (48%). Small sample size.
Mac Keown 1998	To compare macro & micro intake in Black children in 1984with Black children in 1995 in Johannesburg.	Cross sectional	Intake of most nutrients was higher in 1995 except for Vitamin A, ascorbic acid, copper and Fe.	Measurement bias – different dietary assessment tools used.
Faber M 1999	To determine the adequacy of food intake of primary school children living in a low socio-economic rural area.	Cross-sectional	Low fruit and vegetable intake. Despite local production of some vitamin A rich food crops – the quantity of vitamin A rich food eaten was low.	None

Main author	Aim	Study design	Main findings	Other comments
Studies that establish Vitamin A status as a basis for development of national policy continued				
Faber M 1999	To assess nutritional status and dietary intake of children < 2 years old in a low socio-economic rural community in KZN	Cross-sectional	37.3% low serum retinol, 43.3% low Fe stores, 65% anemic. Vitamin A rich food poorly consumed.	Prevalence of anemia was much higher than the national figure of 20%.
Oelofse A 1999	To assess the nutritional status of mother, pre-school and primary school children from a rural area.	Cross-sectional	44,7% of pre-school children, 50,8 % of school children and 1.6% of mothers had marginal vitamin A deficiency.	Community also had a high prevalence of anemia and iodine deficiency. Data is to serve as a basis to plan interventions.
Studies that focus on preventive and promotive strategies				
Van Stuij-venberg ME. 1997	To determine the effect of a micronutrient fortified biscuit & cooldrink on micronutrient status and cognitive function.	Randomized control trial	Decrease in prevalence of low vitamin A levels from 39.1% to 12.2% after 12 months.	The intervention appeared to have a favorable effect on cognitive function.
M Taylor Presented at XIX IVACG conference, 1999	To encourage the consumption of vitamin A containing foods using community health workers.	Intervention	Using CHWS to provide nutritional information and promote the establishment of food gardens may impact on local dietary patterns	Review based on abstract only.

Main author	Aim	Study design	Main findings	Other comments
Studies that focus on Vitamin A as an intervention in the management of sick children				
Hussey G 1990	To asses the effect of oral vitamin A on measles morbidity and mortality	Randomized control trial	Supplemented group had decrease mortality and recovered more rapidly from pneumonia, diarrhea and spent less time in hospital.	Recommended that all children with severe measles be given vitamin A supplements, irrespective of nutritional status.
Coutsoudis A 1991	To determine whether VAS reduces measles morbidity.	Randomized control trial	82% reduction in integrated morbidity score (IMS) on Day 8	Study supports the recommendation for vitamin A supplementation during measles.
Coutsoudis A 1991	To investigate micronutrients (zinc, vitamin A and E) affecting vitamin A levels during and after measles infection and the changes induced in them by VAS.	Randomized control trial	The micronutrients significantly increased in supplemented group.	Study recommends that vitamin A be given to all children with measles, even in communities where VAD is not a recognized public health problem.
CoutsoudisA 1992	To determine the effect of VAS on selected factors of immunity.	Randomized control trial	Increase in measles IgG and lymphocytes in supplemented group.	Findings reinforce results from animal studies that show the pathways of vitamin A activity in decreasing morbidity and mortality are partly founded on selective immunopotentiation.

Main author	Aim	Study design	Main findings	Other comments
Studies that focus on Vitamin A in the management of sick children continued ….				
Coutsoudis A 1995	To determine the effects of VAS on the morbidity of children born to HIV positive mothers.	Randomized control	Decrease in overall morbidity in supplemented group. 49% reduction in diarrhea among HIV infected children.	By 18 months 31% of vitamin A group and 29% placebo group was lost to follow up.
Donald PR 1995	To determine whether vitamin A status or infection was associated with failure to thrive.	Case-control	No association found between vitamin A status and failure to thrive	Other important causes of failure to thrive not measured. Differential investigation of cases and controls. 68% controls had vitamin A serum level < 20ug/100mls.
Dhansay A 1996	To determine plasma retinol levels in women with pre-eccclamptic (PET) presenting with preterm labor	Case control	Women with PET had significantly higher plasma retinol and RPB levels	Review based on abstract.
Smith J 1996	To determine whether vitamin A supplementation from early post-natal life could reduce lung morbidity in very low birth weight babies susceptible to bronchopulmonary dysplasia (BPD)	Randomized control trial	Vitamin A given enterally did not reduce the incidence of BPD	Review based on abstract only.

Main author	Aim	Study design	Main findings	Other comments
Studies that focus on Vitamin A in the management of sick children continued				
Coutsoudis A 1996	To determine whether high dose enteral vitamin A, to correct deficiency among low birth weight (LBW babies) would be well tolerated.	Randomized control trial	Enteral vitamin A was well tolerated.	Small numbers. Study of toxic effects limited because of small sample size.
Dudley L 1997	To evaluate the association between vitamin A status and severity of ARI.	Case-control	There is an association between vitamin A status and ARI (adjusted OR 3.4) and between vitamin A status and severity of ARI.	Possible information bias in reporting of maternal smoking for cases.
Van Stuij-venberg ME 1997	To determine whether there was a relationship between vitamin A status and response to iron fortification program	Before and after. Cross sectional studies at start & at 15 weeks	The presence of marginal vitamin A deficiency in a community may limit the effectiveness of an iron supplementation program	Vitamin A changes correlated with changes in iron status. Mean plasma vitamin A level pre 37.5 ug/dl post 31.9 ug/dl.
Willumsen JF 1997	To determine whether acute and chronic changes in vitamin A metabolism and status support the use of VAS in the treatment of acute injury.	Case-control	Acute respiratory illness does not deplete retinol stores	Small sample size affected power of the study.

Main author	Aim	Study design	Main findings	Other comments
Studies that focus on Vitamin A in the management of sick children continued				
Hanekom WA 1997	To determine the clinical efficacy of high dose vitamin A therapy in children with pulmonary TB.	Randomized control trial	High dose vitamin A had no effect on disease outcome.	No information on randomization process. Mean plasma vitamin A level in children with PTB = 18.1 ug/dl.
Coutsoudis A 1999	To determine the effect of VAS to mothers on birth outcome and maternal-to-child transmission	Randomized control trial	No difference in risk of HIV infection by age of 3 months. Women on supplements less likely to have preterm deliveries.	Pre-term sub-group - was a 47% reduction in mother-to-child transmission (large confidence intervals and small subgroup sample)
A Coutsoudis XIX IVACG conference, 1999	To investigate the effect of VAS on respiratory infections in LBW infants.	Randomized control trial	VAS did not reduce incidence or severity of respiratory infection in LBW infants	Review based on abstract only.
N Rollins Presented at XIX IVACG conference, 1999	To investigate the benefits of VAS for intestinal integrity and diarrheal morbidity for infants of HIV positive mothers.	Randomized control trial	Not available	Review based on abstract only.
N Rollins XIX IVACG conference, 1999	To determine the optimum time for VAS of children for improving recovery and vitamin A status.	Randomized control trial	Timing had no significant effect.	Review based on abstract only.

Main author	Aim	Study design	Main findings	Other comments
Studies that focus on Vitamin A in the management of sick children continued				
SW Mburu Presented at XIX IVACG conference, 1999	To investigate the effect of VAS combined with either a mixed micronutrient supplementation and or antihelminthic treatment on gut integrity (GI).	Randomized control trial	GI tended to improve with vitamin VAS and de-worming, appearing to be evidence of a direct effect of vitamin A on GI. The effect is dependent on de-worming treatment.	Review based on abstract only.
Studies that focus on Vitamin A as a component of the national nutrition program				
Hendricks MH 1998	To analyzing the cost and coverage of a health facility based VAS program. To assess the feasibility of a national fortification program using maize and sugar. To develop preliminary cost estimates of a national fortification program.	Economic	Cost to supplement children aged 6 – 21 months, excluding personnel costs is R5.2 million. Initial cost estimates of fortifying maize meal with vitamin A = R23.2 million, and R73.4 million to fortify sugar.	National coverage, based on immunization coverage, would be 74%

Analysis of local vitamin A research

Research questions were largely formulated on the basis of the researcher's experience, on hypotheses, or on findings in published literature. The DOH did provide funding for 2 of the studies (reference). In this review, it is noteworthy that none of the studies were, solely initiated by the health services.

33% of the studies addressed the assessment of Vitamin A status, 52% focused on analysis of the causes of deficiency and 15% focused on actions or interventions.

Decision-makers were actively involved in 4 of the 25 studies (15%). Involvement included: decision makers being part of the research team and included as co-authors in the publications, decision makers initiating the research and subsequently supervising the research project at the study site, decision-makers opinion had been actively sought and decision makers being involved in reviewing research results.

Research outputs were disseminated as follows:
(in decreasing order of frequency)

- Peer reviewed publications
- Publication of research reports
- Presentation at conferences/clinical meetings
- Dissemination of factsheets/policy briefs
- Oral presentations to decision makers

Although most studies did include recommendations for action, only 4 of the studies provided information on how the recommendations could be implemented. Interestingly, these were the 4 studies in which decision – makers were actively involved in the research.

6.3. Policies related to Vitamin A interventions

Process of nutrition policy development

Prior to 1994 nutrition policies and programs were fragmented and failed to address the basic and underlying causes of malnutrition. Recognizing that addressing malnutrition is a priority for human development, one of the appointments of the Minister of Health in the earliest days of South Africa's new democracy was a Nutrition Committee, charged with the responsibility of developing an integrated nutrition strategy for the country (DOH, 1998).

This strategy was adopted in the Department of Health's White Paper on the transformation of the health system in SA, and provides a framework for implementing its different policy components.

The integrated nutrition program (INP) (DOH, 1998) was based on consultation with a variety of stakeholders, and formulated on evidence from research undertaken in South Africa and elsewhere. Its aim is the improvement of the nutritional status of all South Africans, and one of its focus areas is **micronutrient deficiencies**. See Box 1

Box 1: The Integrated Nutrition Programme

The Integrated Nutrition Programme

The INP aims to facilitate a coordinated, inter-sectoral approach to solving nutrition problems in South Africa and has as its vision optimum nutrition for all South Africans. It will target nutritionally vulnerable communities and groups.

The INP has three main components:

- health-facility based nutrition programs
- community-based nutrition programs
- nutrition promotion programs

The INP identifies a number of focus areas. One of these is:
"Addressing micronutient deficiencies, thorough education, micronutrient supplementation and fortification of staple foods."

The success of the INP is dependent on:

- The establishment of well-functioning districts and district information systems.
- The development of a human resource strategy to provide the skills needed to manage and implement the INP fully. This issue has yet to be comprehensively addressed.
- The establishment of effective multi-sectoral forums through which nutrition programs can be planned and implemented.

Key issues that contributed to vitamin A being put on the agenda

In South Africa, there had been concern about the impact of Vitamin A deficiency on child health for some years (Hussey G 1992a, 1992b, Labadarios D, 1994)). However, prior to 1994, the health department under the former government had no formulated policy on Vitamin A. In 1993, the South African Vitamin A Consultative Group was established with the aim of assessing vitamin A deficiency in SA. At this stage the association between VAD and morbidity, particularly in terms of infectious diseases, was known. In SA a number of small studies had indicated that VAD could be a problem (Hill J 1988, Coutsoudis A 1993). In 1994 the SAVACG conducted the first ever national survey and documented the vitamin A status in children aged 6 – 72 months (SAVACG 1996).

The survey found that 33% of young children had Vitamin A deficiency (serum vitamin A levels < 20ug/dl). According to international criteria this study identifies SA as having a **serious** public health problem of vitamin A deficiency. The prevalence of vitamin A deficiency ranged from 18 % in the Northern Cape to 43% in the Northern Province. The study found that children living in rural areas and whose mother's were poorly educated were more likely to have a high prevalence of marginal vitamin A deficiency.

Initiation of vitamin A policies: the role of research

In 1997, the country's first national Vitamin policy (DOH 1997) was developed by the National Nutrition Directorate in the national Department of Health (Box 2). This was done in consultation with academic and research institutions, and UNICEF.

Box 2: The national vitamin A policy

THE NATIONAL VITAMIN A POLICY

Aim

The aim of the policy is to prevent VAD in the most vulnerable groups by supplementation with high dose vitamin A supplements.

Options

Other options mentioned include food fortification, food diversification and promotion of breast-feeding.

Target groups

The policy targets:

- mothers in the post-partum period
- all infants aged 9 months – 2 years
- high-risk infants and children i.e. those with measles, severe protein energy malnutrition, diarrhea, respiratory disease and chicken pox.

Delivery route

For mothers: Vitamin A is to be given at or within 4 weeks of delivery by the obstetric units.
Children aged 9 months to 2 years: at the time of contact with the primary health care services – according to a schedule.
Children at high- risk: at time of contact with the health service.
The DOH will provide 100 000IU capsule only.

Monitoring and evaluation

Administration of high dose vitamin A supplements is to be recorded on the road-to-health chart and/or on the mother's delivery card

Time period

To be introduced as an interim measure for a period of 3 years
During this 3 year period other more long term measures will be investigated.

Researchers were actively involved in drafting the policy. The policy document provides extensive and well-referenced background information with regard to the association between vitamin A deficiency, morbidity,

mortality and child health and the prevalence of vitamin A deficiency in SA. This was the evidence on which the policy was based.

The policy closely follows the recommendations of the SAVACG survey, but the draft document has some gaps that could be informed by further research. Noteworthy areas are alternative strategies to improve vitamin A status, experience with implementation elsewhere, and the financial and other resource requirements.

Current status of policy

The vitamin A policy remained at draft status for a number of years. The Ministry of Health at the time the policy had been drafted, cautioned the Nutrition Directorate regarding vitamin A toxicity, monitoring of the policy, training issues and the sustainability of vitamin A supplementation. The Minister was supportive of the food fortification option and the DOH has since been actively exploring the option of food fortification. The draft Vitamin A supplementation policy has recently been submitted to the new Minister of Health and was endorsed at the time of writing this report.

Obstacles to implementation

At a provincial level however, there has been general dissatisfaction with the supplementation policy remaining at draft status for such a length of time and most provinces have either drafted or are in the process of drafting their own provincial supplementation policies. There is however no uniformity in the various provincial policies e.g. the Western Cape policy aims to provide vitamin A supplements to high risk children aged 1-2 years. The Northern Province, in contrast, is supplementing all children under the age of 5 years and lactating mothers.

Important issues that the various provinces have encountered in attempting to implement the policy include:

- Problems in acquiring the 100 000IU capsule. The Northern Province pilot project is currently piercing a 200 00IU capsule and giving ½ the contents to those children that requite only 100 000 IU.
- The 100 000 IU capsule was not registered with the Medical Control Council.

- A number of vitamin industries have been reluctant to apply for registration because of the cost implications and the uncertainty of a guaranteed market.
- There have also been problems experienced in terms of acquiring the 200 000 IU capsule. The company supplying the 200 000 IU capsule insisted on a minimum order of 1 million capsules. However the capsule supplied expired within 6 months of the policy being implemented, resulting in wastage of many capsule.
- Supplementation was meant to be recorded on the road-to-health -card, however there was initially no provision for this made on the card.

Food Fortification Policy: the role of research

Although there is currently no written food fortification policy, the Department of Health signaled its intention to formulate a policy by appointing a food fortification task team consisting of representatives from the food industry, research institutions, academic units, professional societies and other departments in 1997.

One of the first tasks of this team has been the commissioning of a food consumption survey carried out in 1999. These activities have been supported by the Micro-nutrient Initiative, USAID Micro-nutrient Program and UNICEF.

Other research identified as related to the development of a policy in this area includes:

- Organoleptic stability tests
- Consumer acceptance undertaken by the CSIR.
- Consumer research for social marketing commissioned in 1999.

In terms of food fortification there are several opportunities for research to accelerate implementation of the food fortification policy.

The above policies are the mainstay of population-oriented preventive and promotive strategies, and in the context of limited resources, are being implemented by targeting the most vulnerable sectors of the child population.

Policies governing clinical management of sick children

On the basis of extensive evidence of the extent to which Vitamin A ameliorates the severity of manifestations of infections, in general, there are widespread recommendations for clinical practice guidelines for the management of children with respiratory infections to include therapeutic doses of Vitamin A (PAWC, 1999). See Box 3

Box 3: Guidelines for the management of sick children that include treatment with vitamin A

Integrated Case Management Guidelines
Vitamin A Supplementation
Provincial Administration of the Western Cape
November 1999

Treatment of children at risk of vitamin A deficiency

Children, between 6 months and 6 years, with; malnutrition, acute recurrent lower respiratory tract infections, recurrent diarrhea, measles, HIV/AIDS, TB, children with eye signs of vitamin A deficiency and low birth weight children, who have not had a high dose vitamin A supplement during the previous 6 months, should be given vitamin A according to the following schedule:

Age	Dosage
6-12 months	100 000 IU orally stat
> 12 month	200 000 IU orally stat

In children with measles. HIV/AIDS and with eye signs of vitamin A deficiency above dosages should be given on 2 consecutive days.
Low birth weight children should receive three dosages of vitamin A in total at 6, 12,18 months.
Any child with eye signs thought to be due to vitamin A deficiency should be referred to a medical practitioner for confirmation of diagnoses and treated according to the above schedule for 2 consecutive days. This treatment should be repeated after 4-6 weeks.

One “package” which has attempted to standardize this approach is the policy of **integrated management of childhood illness** (WHO/UNICEF 1998). See Box 4: Integrated management of childhood illness).

Box 4: Integrated management of childhood illness

Integrated Management of Childhood Illness (IMCI)

The IMCI strategy combines improved management of childhood illness with aspects on nutrition, immunization and other important factors influencing child health. The aims of IMCI are to reduce death, the frequency of severe illness, disability and to contribute to improved growth and development.

The core IMCI intervention is the integrated case management guidelines for the 5 most important causes of childhood deaths: acute respiratory infections, diarrhea, measles, malaria and malnutrition. The combination of interventions can be modified to include conditions that are important in individual countries and for which effective treatment and/ or preventive practices can be identified.

Implementation involves the following three components:

- Improvements in the case management skills of health staff through the provision of locally adapted case-guidelines.
- Improvements in the health system required for effective management of childhood illness
- Improvements in family and community practices.

South Africa has adapted the policy guidelines on the basis of consultation with researchers, academics and health managers. The modified policy has been implemented in some of the provinces, under the guidance of provincial task teams. In terms of the IMCI policy in South Africa, Vitamin A must be given to children with measles, diarrhea and acute respiratory infections . However, in South Africa this aspect of the IMCI has not been implemented because, until fairly recently, vitamin A capsules have not been available.

Thus the policies which govern the management of micro-nutrient deficiency have been broadly based on research evidence, but there is much research

that needs to be undertaken to ensure their successful implementation, and to assess the impact of such interventions on the overall status of micro-nutrient deficiency and its sequelae.

6.4. The extent to which research has influenced policy

Key constituencies are the researchers, policy-makers, industry and international agencies, all of who have contributed to practice relating to vitamin A interventions.

Researchers

In terms of vitamin A, research issues have been identified by largely by professional experience and by reviewing published literature. The main strategies used by researchers to disseminate the research findings included (in order of decreasing frequency)

- Articles published in peer reviewed journals.
- Oral presentations at clinical meetings.
- Oral or poster presentations at conferences.
- Oral presentations at task group meetings.
- Oral presentations to and discussions with professional national and international societies. The thinking with regards to interaction with these organizations is that if research is endorsed by such organizations, by means of organizational recommendations or guidelines, then there a greater chance of the research being utilized by both decision makers and clinicians.
- Presentations during teaching sessions – lectures, short courses.
- Publishing policy briefs/factsheets.
- Running workshops.
- Electronic media - information made available on the institution's website.
- Oral presentations to decision-makers.
- Hosting consensus workshops on the research issue.
- Strategic launches e.g. one of the research institutions launched its research report at the opening of parliament and attracted considerable attention.

The main constraints facing researchers include:

- Time. Researchers are often only funded up to the stage of producing the research report. Generally no provision is made for advocacy activities. There is limited time and resources available to follow up on research recommendations. Once research is complete researcher has to move on to next research proposal or project.

- Performance appraisal
  The main criterion used in performance appraisal is research output in terms of publications. Only recently have some academic and research institutions incorporated other criteria into performance appraisal. These include: teaching, community work, capacity development etc. However the peer reviewed publication still remains the main criterion.

- Interaction with policy-makers

⇒ Tendering system. Researchers felt that often the cheapest is viewed as best.
⇒ Department of Health is viewed as having a poor infrastructure for quick response in terms of research support.
⇒ The administrative system is slow and inhibitory administration.
⇒ System of submitting claim forms and then being re-imbursed for project activities is cumbersome, slow and can result in increased expenses for researcher institutions e.g. one of the research institutions that was awarded a tender by the DOH had to borrow money from its University to start the research project. Because of long delays in receiving the research funds the research institution has now been charged by the University for the loss of financial interest.
⇒ There is an over-reliance by the DOH on external advisors – often results in researchers not being heard.
⇒ The auditing process can be cumbersome.
⇒ Decision-makers appear to be afraid to be seen to be doing anything incorrect and subsequently spend an unnecessarily long time adhering to the administrative and bureaucratic processes.

Researchers also expressed disappointment and disillusionment regarding the fact that the vitamin A supplementation policy, drafted in 1997, was only endorsed by the Health Ministry in 2000.

Other issues identified as impacting on the research-policy connection include:

- Research is just one factor in policy development. Often other factors are stronger in influencing action e.g. public demand.
- Political pressure – decision-makers often have little time to pause to consider research results.
- Hostile policy environment in which public demands for particular services are great and in which decision-makers face severe budgetary constraints.

Opportunities for dialogue between researchers and policy makers

The DOH has recently established a Nutrition Research Forum to attempt to create a meeting place for researchers and policy makers in the nutrition field. Researcher's also expressed the need for a forum in which research issues facing all researchers (not just nutrition researchers) could be discussed.

Policy-makers/decision-makers

Decision makers commented that their involvement in research activities is a relatively new experience.

The main constraints experienced by decision-makers include:

- A lack of understanding, by researchers and others, of the health systems and of policy process.
- Research recommendations that are often unrealistic, include too few options, a long “shopping list” of recommendations that appears to further the interests of researchers, costs of recommendations seldom considered. Policy makers would like recommendations to include information on who should undertake the recommendation, how this could be done in the local context, what skills are required for implementation and what costs will be incurred.
- Research reports often look good but are difficult to read. Executive summary is not always well written.
- High staff turnover and change in staff positions impacts on planning and management of all programs.
- Provincial decision-makers have been constrained because of the absence of a final national vitamin A supplementation policy.

The decision-makers themselves accepted that the DOH is a bureaucratic organization, but the bureaucracy is seen as being necessary to protect managers and protects against errors. The DOH has recognized that it needs to identify its own research priorities and is in the process of addressing this.

Industry

Industry acknowledges that it will be able to derive social and economic benefits from vitamin A supplementation programs and from food fortification program. The marginal benefits are likely to be greater with food fortification as opposed to vitamin a supplementation. The industry also recognizes the importance of improving Vitamin A status of children in SA. There is a general feeling that the process in developing vitamin A related policies has been very consultative, but far too long drawn.

Industry's role

The vitamin A industry played an important facilitatory and funding role in the establishment of the SAVACG, which led to the first national vitamin A survey being conducted. One industry, Roche Pharmaceuticals, has a Vitamin Information Center and is actively involved in the dissemination of vitamin A research results. This industry has produced policy research briefs on: the results of the SAVACG survey; vitamin A status, reproductive health and survival and the safety of vitamin A and its pre-cursor. Support to researchers and research institutions is usually in the form of provision of vitamin A pre-mix, access to the industry laboratory and technology. The industry does attend and participate in conferences, professional meetings and in policy discussions.

The milling industry has expressed concern regarding the cost of the fortificant, particularly since the maize meal consumption curve is flat and that of wheat consumption decreasing. The industry would like to see the DOH pay for the cost of the fortificant, until the market improves. The DOH has however not made a commitment to meeting this cost. The milling industry is also concerned that bush millers might not fortify the maize and wheat and thus be in a position to undercut the industry price. There is also concern about illegal import of unfortified maize and wheat from surrounding countries and the capacity to monitor compliance.

Industries with their research and development facilities are a potentially rich source of technical expertise and could be utilized in developing affordable, sustainable solutions to vitamin A deficiency. Some industries will also be in a position to offer assistance with training in assessment, quality control and evaluation procedures.

International agencies

Since 1994 there has been an increased international agency activity in SA. UNICEF is one international agency that has played an important role in terms of vitamin A policy and research in SA (UNICEF, 1998). The agency's involvement in SA has undergone a number of phases and is currently governed by the Basic Agreement of Co-operation. Following the first democratic election in 1994, the Funds Programs and Specialized Agencies of the United Nations established their formal presence in the new SA.

One of UNICEF's priority areas is the improvement of the micro-nutrient status of SA children. To this end UNICEF has worked closely with the DOH and other role-players in SA. Key strategies used by UNICEF include:

Support of consensus building activities.

UNICEF sponsored a meeting to build consensus among technical people working in nutrition in SA in 1994. The output from this meeting became an important input into the work of the Nutrition Committee. UNICE also co-sponsored the Biennial Congress of the Nutrition Society of Southern Africa and the Association for dietetics in SA and hosted the 6th household food security network meeting for the East and Southern region in 1994.

Technical assistance e.g. developing the vitamin A policy, in establishing IMCI and more generally to the nutrition directorate in the restructuring of the health sector.

Research support e.g. UNICEF provided funding for the SAVACG survey and the consumer research for social marketing of fortified foods. Both of these are key items of research in developing strategies to overcome VAD in SA.

Exposure to international best practise by disseminating research findings,

hosting visitors and sponsoring visits to other countries.

All of the above strategies have included the principle of building local capacity.

7. Discussion

7.1. Research issues

Classification of research according to the stage (assessment, analysis or action) being addressed provides a picture of the focus of research and academic institutions. Using this classification 33 % of the studies addressed issues relating to the assessment of the situation (i.e. describing manifestations, consequences or causes of VAD); 52 % addressed issues relating to an analysis of relationships between either causes, associated factors or consequences of VAS and only 15 % focussed on actions. This is similar to the findings of Beaudry in which abstracts submitted for a “young investigator travel bursary” were assessed and it was found that 29 % addressed the assessment stage, 58% the analysis phase and 13% the action phase (Beaudry 1999).

The imbalance in focus points, amongst other things, to a lack of health systems and policy research skills. It is interesting to note that in 1987 SA was ranked 12th in terms of scientific capability yet the gap in terms of health systems research is enormous If academic and research institutions wish to contribute to the improvement of nutrition then issues related to the " action stage" need to be actively fostered.

Policy development and action requires collaboration between decision - makers and researchers. In this study we assessed decision - maker involvement in the research process. There were only 4 studies in which stakeholders were actively involved in the research process. Interestingly the recommendations from these studies provided information on how recommendations could be implemented. Failure to include decision- makers in research could be a constraint to effective nutrition action. The DOH has recognized the need to adopt a pro-active approach in terms of its research requirements and the recently formed Nutrition Research Group will be addressing nutrition research priorities within the DOH.

Researchers need to take cognizance of the concerns expressed by the decision-makers with respect to research recommendations and preferred format of research presentations. A few institutions have used “non-traditional” methods of research dissemination” e.g. strategic launches of research, hosting of consensus workshops. The experiences, success and impact of these methods in SA need to be documented and further explored.

The type of research outputs, methods used to disseminate findings suggest that the majority of researchers see fellow researchers and clinicians as their primary target audience. This could be related to the fact that performance appraisal is largely determined by research publications. It is hoped that the emerging trend to include other criteria in performance appraisal (e.g. community development, teaching, capacity development) will broaden the researcher target audience.

An important aspect of research- policy –action linkage is the capacity to synthesize research and be able to provide quick evidence based answers to queries that are raised regarding the policy. Attention needs to be given to develop this research synthesis capacity in SA.

Concerns have been raised by researchers regarding, the research support systems within the DOH, and the effects of the bureaucratic administrative system. This is a complex issue to address but clearly a first step would be for both parties to become aware of the difficulties faced by each other in the research-policy-action linkage and then to work toward solutions. The Nutrition Research Group, which will include both decision- makers and researchers, could provide a forum for such discussions.

The problem also highlights the importance of development of management capacity both in terms of management skills and in self-development, to avoid the overuse of red tape to protect oneself. This is particularly important in the context of newly appointed mangers and administrators who are often from previously disadvantaged background and might have limited experience in management positions.

7.2. The policy process

The process followed in developing the vitamin A draft policy has been fairly consultative with research and researchers being incorporated in the process. However the vitamin A supplementation remained in draft stage for a considerable period. The reasons for the delay in finalization of the vitamin A supplementation policy have not been clearly articulated to key role-players and have been a cause of much disillusionment and disappointment. This disillusionment is counterproductive to future research- policy links and highlights the importance of communication at all stages of policy development.

7.3. Other role-players

Food fortification is a good example of a situation where parties with different primary interests need to collaborate toward the common goal of improving the nutritional status of children. Industry could be an important resource to the DOH in terms of technology and training. There are also clear economic benefits for industry to be an active partner in food fortification in SA. Clearly for the private sector to exist it needs to be making a profit However there are issues related to social responsibility that need to be brought into the equation. The issues raised by the industry with regard to competing illegal products and cost need to be addressed.

NGOs and CBO's play an important role in improving the nutritional status of children in SA, through community education, the establishment of food gardens and through income generation projects. However none of the NGOS have been directly involved in vitamin A research and policy development. This could be related to the fact that there is no national nutrition NGO alliance, nor is there a nutrition focus in the existing South African NGO Coalition (SANGOCO).

International agencies have played an important role in supporting nutrition research and developing nutrition policies. There is still much that international agencies can contribute to in terms of accelerating policy implementation.

7.4. Research to policy and action in an emerging democracy

This case-study illustrates some of the unique features of an emerging democracy that impact upon the research-policy-action linkage.

Staff movement into and within the health system has important planning and training implications. It also means that research results may need to be presented more than once to a particular unit or department.

In South Africa the new Government placed great emphasis on consultation, transparency civil involvement in policy development. The development of the vitamin A related policies clearly followed a much more consultative process than previously. The opening of the Parliamentary Portfolio Committee to the public allows greater public involvement in decision making. However lack of prior experience with the policy making process results in less interaction or involvement in policy development. In order to increase the uptake of research results researchers need to be aware of and become skilled in interacting with the policy making process.

Newly elected governments are under pressure to perform. Research that demonstrates visible public benefit is thus more likely to be taken up. To increase research uptake by policy-makers however there also needs to be research capacity in terms of:

- synthesizing research results and presenting them in user friendly formats to policy makers.
- ability to respond rapidly to concerns raised by key role players about particular policy issues.

In a period of radical government change as has been experienced in SA it is critical that managers are skilled in change management. Researchers and civil servants also need to be made more aware of the complexity of the change process.

The SA government has committed itself to major health reforms. The extent to which these reforms are successful, the context, and the factors that constrain and facilitate the reform process need to be documented, monitored and evaluated. Public health academics, researches and

independent NGOs are in a position to perform this function and to increase public awareness on the extent to which the government has been successful in bringing about change in the health sector.

Utilization of research findings cannot be seen in isolation. Action is dependent of many other factors. In the South African context these include:

- Other reform processes such as the establishment of districts and the orientation toward a primary health care.
- The macro-economic policy – Growth, Employment and Reconstruction (GEAR), adopted by the new government. In terms of this policy the government is seeking to cut the budget deficit, whilst at the same time not increasing the tax burden. This has resulted in serious resource constraints in the health sector
- Health staff placed in new positions and often feeling "demoted" with the formation of a single health ministry.
- Staff hostility toward the new heads of sections and divisions.
- Limited experience in terms of policy research, policy analysis and management.
- Lack of skilled public health and primary health care professionals.
- Exodus of expertise both to the private sector and to other countries.
- The public outcry against cuts in tertiary services.
- Public expectation of the new government to make visible deliveries.

The first five years of the new democracy have been spent on the process of policy development. South Africa is now entering the stage of policy implementation and action. The challenge is for researchers, decision-makers, health service providers and other relevant role-players to support each other in moving from policy to action in the next few years.

8. Recommendations

8.1 Improving the research-policy-action linkage

The following recommendations are made with regard to improving the research-policy-action linkage.

1. Increasing opportunities for dialogue between policy and researchers by the:

- Establishment of research-policy forums
- Inclusion of policy-makers on research advisory boards
- Inclusion of researchers in policy forming task groups
- Inclusion of decision makers in the research process

2. Establishment of a research forum where issues facing researchers can be discussed e.g. performance appraisal, collaborative research.

3. Establishment of research advocacy bodies to promote uptake of research.

4. Addressing capacity development with regard to:

- Policy research
- Policy process
- Research synthesis
- Systematic reviews
- Health systems research
- Economic research
- Research communication
- Understanding and utilizing research
- Understanding the political context
- Policy communication

5. Researchers need to improve attention toward formulation of recommendations. Recommendations need to be practical, feasible, and considerate of costs, skills and resources needed for their implementation. Inclusion of decision- makers in the research process could facilitate the formulation of useful recommendations.

6. Improving research administrative support within the DOH.

7. Increased incentives to undertake health systems, economic and policy research, promotion of research results, monitoring of the research policy- action process, research communication strategies. This could be done through increased funding opportunities and greater chance of publication in peer -reviewed journals.

8. Funding agencies requiring that proposals:
- demonstrate interaction with decision makers
- indicate target audiences for research results
- include a range of dissemination strategies.

8.2 Issues needing further research

- vitamin A deficiency among school children
- reasons for vitamin A deficiency in areas with vitamin rich crops/foods
- measurement of vitamin A in individuals
- economic studies e.g. cost to supplement the " unreachable," cost effectiveness of fortification options
- concerns of the fortification industry with regard to market trends, costs and illegal products
- development of a monitoring framework for food fortification
- issues relating to fortification legislation
- implementation – barriers and facilitating factors
- the research- policy environment – barriers and facilitating factors
- monitoring and evaluation of the extent to which nutrition commitments are being kept.

9. Conclusion

The research–policy-action connection is a complex one. A newly emerging democracy presents unique opportunities and challenges in improving the linkage.

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11. Appendix A: List of interviewees

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