

| ANNA COUTSOUDIS |

TOP THREE AWARDS

- ASSAf Science-for-Society Gold Medal Award, 2009
- Nutrition Society of South Africa award for outstanding contribution to nutrition research, 2004
- GSK/Save the Children Health Care Innovation Award, 2015

DEFINING MOMENT

In my first year out of school I had enrolled in pharmacy studies with my goal being that of a typical child of immigrant parents to open a pharmacy and become wealthy and significant. Halfway through the year I had an encounter with Jesus Christ and made a decision to follow Him and His teachings and ways – my goals soon changed and I found myself being uncomfortable with the career choice so I switched to a BSc so that I could help others through the means of teaching and mentoring people less privileged than I.

WHAT PEOPLE DO NOT KNOW

I love dancing even though I have very little rhythm or co-ordination.



GUIDED BY NEEDS

Anna Coutsooudis was born in Durban on 21 September 1952. Upon completion of her schooling, Coutsooudis enrolled for a BSc degree at the University of Natal, majoring in biological science and chemistry. This was followed by an Honours degree in 1974, where she researched leukocyte antigens in vervet monkeys. Coutsooudis went on to complete qualifications in higher education, and spent a number of years teaching biology at high-school level.

Coutsooudis' career as a research scientist began when she joined the University of Natal's Department of Paediatrics and Child Health in 1990 as a research technician. Here she carried out a number of studies relating to immunity and vitamin A (retinol). She researched the impact of vitamin A on immunity relative to a number of conditions, including measles, respiratory disease and HIV. Whilst employed in this capacity, she undertook PhD studies under the mentorship of Prof Hoosen Coovadia and received her doctorate in 1994. Her focus was on the clinical and epidemiological studies of vitamin A in African pre-school children in South Africa, with an emphasis on measles. In 1998, she was appointed as a research fellow and lecturer at the university, attaining the rank of Professor in 2006.

Coutsooudis was responsible for the first international randomised controlled trial (RCT) investigating the relationship between measles-associated morbidity and vitamin A. This study ascertained that children receiving vitamin A had lower measles-related morbidity compared to those children receiving the placebo. These findings informed government policy to administer high-dose vitamin A to children suffering from cases of severe measles.

As an authority on vitamin A, she was appointed as one of four Co-Directors of the South African Vitamin A Consultative Group, formed in 1993. This group aimed to assess the anthropometric, vitamin A and iron status of South African children, as well as considering immunisation and goitre, informing the development of the related programmes by the Department of Health. Surveying numerous pre-school age children, it became evident that a large number of children in poor areas suffered from vitamin A deficiencies. This led to changes in government procedure, recommending

that children should receive vitamin A doses as a matter of routine. She has also acted as an informal advisor to the Department of Health with regard to the development of nutritional policy since 1996, as well as consulting with the World Health Organisation (WHO) on a variety of issues related to vitamin A supplements.

Apart from her substantial contributions in the field of vitamin A research, Coutsooudis has played a pivotal role in trailblazing research around maternal and child health related to the complex issue of Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS). She expanded her research on vitamin A and immunity by investigating its effect on infants exposed to HIV. She conducted the first international randomised controlled trial, testing the effect of vitamin A on morbidity in infants born to mothers infected with HIV. Once again, she showed the beneficial effects of vitamin A, as results indicated that the HIV-infected infants who received doses of the vitamin suffered fewer severe diarrhoea episodes. This influenced government policy, with six-monthly supplements of high-dose vitamin A being administered to all children infected with HIV following the publication of these findings.

In addition, she has been involved in investigating factors contributing to the transmission of HIV from infected mothers to their infants. A major finding with international impact was that she was able, for the first time, to establish that non-exclusive breastfeeding increased the risk of infants contracting the virus from their mothers. This emphasised the importance of exclusive breastfeeding as the norm – a departure from the prevailing wisdom at the time which caused considerable controversy amongst fellow scientists as well as the local community. However, rigorous investigation over a number of years has proven the validity of these conclusions, and these have now been included as part of the international Joint United Nations Programme on HIV/AIDS (UNAIDS) guidelines on HIV and breastfeeding policy. These initial studies have been expanded, as well as auxiliary investigations being undertaken.

As an expert in the field of HIV/AIDS, she has participated in an informal working group on the prevention of mother-to-child transmission of HIV under the auspices of UN/AIDS, as well as being part of a team commis-

sioned by the WHO to prepare a report on the progress of child health and nutrition research and its role in programme development for a special session focusing on children hosted by the United Nations. From 2002 – 2005, she served as a board member of the Child Health and Nutrition Research Initiative of the WHO/Global Forum for Health Research and in 2006, she was elected as member of the Technical Steering Committee of the WHO, Child and Adolescent Health unit.

In collaboration with researchers from the University of California, she has participated in extensive research on methods which could be used to make breastfeeding safer for HIV-exposed infants. Together, they have pioneered the use of flash-heating of breast milk to render it safe for consumption – a practice which is now accepted in South Africa and is taught in curricula of the medical and health sciences. Continuing her work on breast milk pasteurisation, she collaborated with the Programme for Appropriate Technology in Health (PATH) and Rohit Chaudri, a computer engineer from the University of Washington who developed an Android application system called FoneAstra to enable low-cost breast milk pasteurisation. This consists of a temperature probe which connects to a mobile device while heating breast milk, and the probe is linked to the app on the mobile device, guiding health workers through the process of pasteurisation thereof. Another boon for developing regions is that no electricity is required for this process (beyond that of having a charged handset battery) allowing it to function in areas where there is no, or restricted, access to electricity. This method renders the breast milk safe for consumption within a matter of 17 minutes, as opposed to the numerous hours it would take to pasteurise the milk using industrial equipment. Funding from the Bill and Melinda Gates Foundation has made it possible to use this low-cost equipment to set up five Human Milk Banks in small public hospitals in KwaZulu-Natal (KZN).

In December 2015, Coutsooudis' team from the University of KwaZulu-Natal (UKZN) was the recipient of the GlaxoSmithKline (GSK) and Save the Children Health Care Innovation Award, enabling them to scale up their low-cost pasteurisation systems in community settings. The need for such systems has also been expressed by other African countries and Coutsooudis and her team will be using the grant money to set up Human Milk Banks in Ethiopia and Cameroon.

The affordability of the device enables babies in communities with limited resources to gain the maximum nutritional and consequent immune benefits from breastfeeding, giving infants access to breast milk where it may not have been possible before. "The only time when rich and poor children are on an equal footing is in the first six months [of life]," Coutsooudis said upon receiving this award, explaining her passion for the project. "This is because the breast milk of poor mothers and rich mothers is exactly the same."

HAVING A DESTINY

Coutsooudis has been guided directly by the most pressing needs of the community in which she works, not only in her work as a researcher, where her contributions have had tremendous impact, but also as a humanitarian. Together with her husband, Nick, she is active in the ministry of their church, and is driven to fundamentally improve the circumstances of children affected by HIV/AIDS. In order to expand this reach, she established a non-profit organisation (NGO) called iThemba Lethu (which means "I have a destiny" in Zulu), where she has acted in the capacity of chairperson from 2000 to 2015. This NGO addresses the needs of children, particularly those in the KZN region, in a number of ways. One programme deals with caring for children orphaned as a result of AIDS, while another entails running a HIV prevention programme. Offering a holistic school and other interventions, the programme reaches school pupils as well as parents and caregivers and empowers them to strengthen family structures, thereby supporting positive changes in behaviour in the fight against HIV/AIDS. Through these interventions, iThemba Lethu has been able to make a substantial impact in these communities.

Another notable feature is that she established the first community-based breast milk bank in South Africa, the iThemba Lethu Breast Milk Bank in Durban. The donated breast milk enables infants either abandoned by HIV-positive mothers or orphaned as a result of HIV/AIDS, to be fed and cared for. Having received funding from United Nations Children's Emergency Fund (UNICEF) for this endeavour, the first of its kind worldwide, she documented its processes in order to offer a model for best practice. In order to improve the functioning of similar banks and to ensure that inter-

national standards are upheld, she was involved in establishing the Human Milk Banking Association of South Africa (HMBASA). She was elected as its first chairperson in 2008, in which capacity she has assisted in developing guidelines for operating breast milk banks in South Africa.

DOMINUS ILLUMINATIO MEA

Coutsoudis has been prolific in research and holds to the motto of Oxford University “*Dominus illuminatio mea*” – the opening words of Psalm 27, The Lord is my light – she attests to the fact that God has illumined the pathway of her scientific endeavours. Her list of publications is comprehensive, numbering over 120 articles in peer-reviewed journals, as well as a number of reports, books and conference papers, as well as having served as a reviewer for many others. In addition to this, she served on the editorial board of the *International Breastfeeding Journal*, the *Maternal and Child Nutrition Journal*, and *PLOS One*. Her engagement, however, has not been limited to the academic milieu – she has frequently contributed to articles and blogs in popular media, also speaking at numerous events, to raise awareness of the issues around breastfeeding, infant health and HIV/AIDS. Beyond her accomplishments as a researcher and as an advocate, Cout-soudis has been active in developing students and aspiring researchers. At undergraduate level, she has taught medical students about breastfeeding, as well as teaching research methodology, while her postgraduate instruction has expanded on public health policy, nutrition and prevention of mother-to-child transmission of HIV. She has supervised several students, from various international institutions and locally, at Masters and PhD level. This includes the supervision of a number of post-interns from the Medical Research Council (MRC). Her passion for education is also evident in the developmental initiatives she has undertaken in her role as a humanitarian, where training and empowerment at all levels form an important part of the interventions undertaken by iThemba Lethu. Similarly, she has been involved in the conception of a variety of resources for use by HIV counsellors and local community health workers. Internationally, she has been involved in courses and seminars in the United States, Canada and Sweden, amongst others.

She is a member of a number of professional and academic bodies, including the Nutrition Society of Southern Africa, and is an elected Member of the Academy of Science of South Africa (ASSAf), as well as being a Fellow of The World Academy of Sciences (TWAS).

In 2005, she was recognised by civil society, through her selection as one of the country's top 100 achieving women featured in a book titled: *Valued Citizens Initiative Art Book, Celebrating Women through the Eyes of our Children*.

In an advisory capacity, she has been active at national government level, as well as participating in a variety of prestigious International Advisory Committees. She is a member of the PATH, Technical Advisory Group on International Human Milk Banking.

Coutsoudis pays tribute to the many colleagues with whom she has worked, especially her previous Heads of Department, Professors Coovadia and Adhikari, who created an affirmative and supportive environment for her to do her research work. She also acknowledges the important role of the many lay counsellors and research assistants with whom she has worked on community health programmes. She believes she learnt much from them in understanding the importance of health being more than just medical intervention and the importance of the spiritual, and psychosocial elements of health. She comments “if we wish to see progress in health and development in South Africa, we are going to have to work together not only across racial divides but more especially across hierarchical divides where we see each other as equally important – the doctor and nurse as important as the lay counsellor and the mother – where there is no rank and we all work in a compassionate and caring way towards one goal of improving the health of our society”.

As a passionate follower of Jesus Christ, she believes His teachings have transformed her life and given her the desire to serve others and improve the lot in life especially of women and children. She is looking forward to the next season of her life as she has fun with her five young grandchildren and invests in them the teachings of Jesus – “Love the Lord your God with all your heart and your neighbour as yourself”.

Academy of Science of South Africa (ASSAf)

ASSAf Research Repository

<http://research.assaf.org.za/>

A. Academy of Science of South Africa (ASSAf) Publications

C. ASSAf Policymakers' Booklets

2017

Legends of South African Science

Academy of Science of South Africa (ASSAf)

Academy of Science of South Africa

Academy of Science of South Africa (ASSAf), (2017). Legends of South African Science.

[Online] Available at: DOI <http://dx.doi.org/10.17159/assaf.2016/0012>

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