



THE ATHENS INSTITUTE FOR EDUCATION AND RESEARCH

# Abstract Book

5<sup>th</sup> Annual International Conference on  
Public Health  
24-27 June 2019, Athens, Greece

Edited by  
Gregory T. Papanikos

2019



Abstracts  
5<sup>th</sup> Annual International  
Conference on Public Health  
24-27 June 2019, Athens,  
Greece

Edited by Gregory T. Papanikos

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## Preface

This book includes the abstracts of all the papers presented at the 5<sup>th</sup> *Annual International Conference on Public Health (24-27 June 2019)*, organized by the Athens Institute for Education and Research (ATINER).

In total 21 papers were submitted by 26 presenters, coming from 17 different countries (Australia, Austria, Canada, China, Croatia, France, India, Italy, Libya, Macau, Malaysia, Poland, Saudi Arabia, South Africa, Sweden, Switzerland, and USA). The conference was organized into 9 sessions that included a variety of topic areas such as Urban Health, Metabolic Syndrome & Diabetes, Health Care & Providers, Hospitals, Primary Care, Social Determinants, Child, Maternal, Paediatric and Adolescent Health, Pharmaceuticals and other. A full conference program can be found before the relevant abstracts. In accordance with ATINER's Publication Policy, the papers presented during this conference will be considered for inclusion in one of ATINER's many publications.

The purpose of this abstract book is to provide members of ATINER and other academics around the world with a resource through which to discover colleagues and additional research relevant to their own work. This purpose is in congruence with the overall mission of the association. ATINER was established in 1995 as an independent academic organization with the mission to become a forum where academics and researchers from all over the world could meet to exchange ideas on their research and consider the future developments of their fields of study.

It is our hope that through ATINER's conferences and publications, Athens will become a place where academics and researchers from all over the world regularly meet to discuss the developments of their discipline and present their work. Since 1995, ATINER has organized more than 400 international conferences and has published nearly 200 books. Academically, the institute is organized into 6 divisions and 37 units. Each unit organizes at least one annual conference and undertakes various small and large research projects.

For each of these events, the involvement of multiple parties is crucial. I would like to thank all the participants, the members of the organizing and academic committees, and most importantly the administration staff of ATINER for putting this conference and its subsequent publications together. Specific individuals are listed on the following page.

**Gregory T. Papanikos**  
**President**

**5<sup>th</sup> Annual International Conference on Public Health**  
**24-27 June 2019, Athens, Greece**

**Scientific Committee**

All ATINER's conferences are organized by the [Academic Council](#). This conference has been organized with the assistance of the following academics, who contributed by a) setting up the program b) chairing the conference sessions, and/or c) reviewing the submitted abstracts and papers:

1. Gregory T. Papanikos, President, ATINER & Honorary Professor, University of Stirling, UK.
2. George Zahariadis, Academic Member, ATINER & Associate Professor and Director, Newfoundland and Labrador Provincial Public Health Laboratory, Memorial University of Newfoundland, Canada.
3. Steven Jonas, Academic Member, ATINER & Professor Emeritus, Stony Brook Medicine, Stony Brook University, USA.
4. Paul Contoyannis, Head, Health Economics & Management Unit, ATINER & Associate Professor, McMaster University, Canada.
5. Vickie Hughes, Director, Health & Medical Sciences Division, ATINER & Assistant Professor, School of Nursing, Johns Hopkins University, USA.
6. Jean Moraros, Academic Member, ATINER & Associate Professor, University of Saskatchewan, Canada.
7. Harald Stummer, Academic Member, ATINER & Head of Institute and Professor, UMIT - University for Health Sciences, Medical Informatics and Technology, Austria.
8. Adel Zeglam, Academic Member, ATINER & Consultant Neurodevelopment Pediatrician, Professor, Tripoli University Hospital, Libya.
9. Lars-Ake Levin, Professor, Linköping University, Sweden.
10. Carine Milcent, Professor, Paris School of Economics, France.
11. Melinda Ickes, Associate Professor, University of Kentucky, USA.
12. Steffani Driggins, Associate Professor, Allen University, USA.
13. Giuliano Masiero, Associate Professor, University of Bergamo, Italy.
14. Justyna Roj, Associate Professor, Poznań University of Economics and Business, Poland.



**FINAL CONFERENCE PROGRAM**  
**5<sup>th</sup> Annual International Conference on Public Health, 24-27 June 2019,**  
**Athens, Greece**

**Monday 24 June 2019**

**Conference Venue:** Titania Hotel, 52 Panepistimiou Avenue, Athens, Greece (close to metro station *Panepistimio*)

**07:50-08:20 Registration and Refreshments**

**08:30-09:00 (Room A - 10<sup>th</sup> Floor): Welcome and Opening Address by Gregory T. Papanikos, President, ATINER.**

**09:00-10:30 Session I (Room A - 10<sup>th</sup> Floor): Urban Health: Metabolic Syndrome & Diabetes**

**Chair:** George Zahariadis, Associate Professor and Director, Newfoundland and Labrador Provincial Public Health Laboratory, Memorial University of Newfoundland, Canada.

1. Steffani Driggins, Associate Professor, Allen University, USA & Kareem Muhammad, Assistant Professor, Allen University, USA. Metabolic Syndrome Study at a Historically Black College/University in South Carolina.
2. Sudha Sivadas, Graduate Student, Universiti Putra Malaysia, Malaysia & Normaz Wana Ismail, Associate Professor, Universiti Putra Malaysia, Malaysia. Urbanisation and Prevalence of Non-Communicable Diseases in Malaysia.

**10:30-12:00 Session II (Room A - 10<sup>th</sup> Floor): Health Care & Providers**

**Chair:** Steffani Driggins, Associate Professor, Allen University, USA.

1. George Zahariadis, Associate Professor and Director, Newfoundland and Labrador Provincial Public Health Laboratory, Memorial University of Newfoundland, Canada, Robert Needle, Research and Development Scientist, Newfoundland and Labrador Provincial Public Health Laboratory, Memorial University of Newfoundland, Canada & Laura Gilbert, Informatician, Newfoundland and Labrador Provincial Public Health Laboratory, Memorial University of Newfoundland, Canada. Molecular Multiplex Testing for Acute Gastroenteritis: Transformative Effect on Enteric Disease Management and Surveillance.
2. Lars-Ake Levin, Professor, Linköping University, Sweden & Therese Eriksson, PhD Student, Linköping University, Sweden. Effects of a Value based Reimbursement System - An Example from Stockholm, Sweden.
3. Hannah Ashwood-Smith, Nurse Educator, Camosun College, Canada & Lorelei Newton, Nurse Educator, Camosun College, Canada. *Poverty is our Biggest Enemy: A Multi-Country Study on Canadian Nursing Student's Global Health Knowledge Acquisition during International Learning Experiences.*

**12:00-13:30 Session III (Room A - 10<sup>th</sup> Floor): Hospitals**

**Chair:** Lars-Ake Levin, Professor, Linköping University, Sweden.

1. Justyna Roj, Associate Professor, Poznań University of Economics and Business, Poland. Financial Performance Index for University Hospitals: DEA Approach. Case of Poland.
2. Ivan Bosnjak, Doctor of Medicine, Community Health Centre Zagreb, Croatia & Marija Bosnjak, Employee at Ernst & Young, University of Zagreb, Croatia. Lean

System Management in Hospitals.

3. Omar Da'ar, Assistant Professor, King Saud bin Abdulaziz University for Health Sciences, Saudi Arabia, Khalid Alahmary, King Saud bin Abdulaziz University for Health Sciences, Saudi Arabia & Majid Alsalamah, King Saud bin Abdulaziz University for Health Sciences, Saudi Arabia. Association between Emergency Department Visits and Predisposing, Enabling, Need, and Reinforcing Social Factors in an Acute Setting.

**13:30-14:30 Lunch**

**14:30-16:00 Session IV (Room A - 10<sup>th</sup> Floor): Primary Care**

**Chair:** Giuliano Masiero, Associate Professor, University of Bergamo, Italy.

1. Helen Naug, Senior Lecturer, Griffith University, Australia, Peta Coles, Honours Student, Griffith University, Australia & Natalie Colson, Senior Lecturer, Griffith University, Australia. Health Literacy as an Important Consideration for Intervention Programs.
2. Ging Chan, Associate Professor, University of Macau, Macau, Yan Guo, Master Student, University of Macau, Macau, Yunfeng Lai, Postdoctoral Fellow, University of Macau, Macau, Hao Hu, Associate Professor, University of Macau, Macau & Carolina Ung, Professor, University of Macau, Macau. A Comparative Study on Drug Utilization for Respiratory Diseases at Rural Primary Medical Institutions and Urban Primary Medical Institutions in China.

**16:00-17:30 Session V (Room A - 10<sup>th</sup> Floor): Social Determinants**

**Chair:** Harald Stummer, Head of Institute and Professor, UMIT – University for Health Sciences, Medical Informatics and Technology, Austria.

1. Giuliano Masiero, Associate Professor, University of Bergamo, Italy and Università della Svizzera italiana, Switzerland, Michael Santarossa, PhD Student, University of Pavia, Italy & Fabrizio Mazzonna, Associate Professor, Università della Svizzera italiana, Switzerland. Does Social Expenditure Mitigate the Effect of Environmental Shocks on Health?
2. Adel Zeglam, Consultant Neurodevelopment Pediatrician, Professor, Tripoli University Hospital, Libya. Is Autism a Major Public Health Concern? Libyan Perspective.
3. Shuhan Jiang, Lecturer, Zhejiang Chinese Medical University, China. Unassisted Smoking Cessation in China: A Population-Based Study.

**21:00-23:00 Greek Night and Dinner**

**Tuesday 25 June 2019**

**08:30-12:00 Session VI: An Educational Urban Walk in Modern and Ancient Athens**

Group Discussion on Ancient and Modern Athens.

Visit to the Most Important Historical and Cultural Monuments of the City (be prepared to walk and talk as in the ancient peripatetic school of Aristotle)

**Conference Venue:** University of Athens (Kapodistriako), 48 Akadimias Street, Athens, Greece ([map](#), close to metro station *Panepistimio*)

**12:30-14:00 Session VII (Room A): Child and Adolescent Health**

**Chair:** Carine Milcent, Professor, Paris School of Economics, France.

1. Melinda Ickes, Associate Professor, University of Kentucky, USA & Jakob Hester, Wellness Specialist, University of Kentucky, USA. E-cigarette Use among Emerging Adults: Is Juuling Just a Trend?
2. Yawei Guo, Master Student, Shandong University, China. Comparing the Economic Burden of Diabetes Mellitus in Children with and without Medical Insurance: A Cross-Section Study in Shandong Province.
3. Tulasi Malini Maharatha, Research Scholar, Indian Institute of Technology Madras, India. Horizontal Inequity in Child Health Care Services in India: A Cross Sectional Study Using the Demographic Health Survey 2015-16.

**14:00-15:00 Lunch (Details during registration)**

**15:00-16:30 Session VIII (Room A): Maternal, Paediatric and Child Health**

**Chair:** Melinda Ickes, Associate Professor, University of Kentucky, USA.

1. Carine Milcent, Professor, Paris School of Economics, France. Impact of Private Health Insurance on a Public Healthcare System: The Case of Cesarean Deliveries.
2. Tina Montreuil, Assistant Professor, McGill University, Canada. School-Based Mental Health: Barriers, Evidence, and the Need for a Policy-Oriented Approach.
3. Min Yu, Professor, Academy of Military Medical Sciences, China. Impact of Conditional Cash Transfer Scheme on Maternal and Child Health in China Rural Area: A Qualitative Semi-structured Interview Study.

**16:30-18:00 Session IX (Room A): Pharmaceuticals**

**Chair:** Justyna Roj, Associate Professor, Poznań University of Economics and Business, Poland.

1. Edina Sinanovic, Head, Health Economics Division, University of Cape Town, South Africa. Cost of Treatment for Drug-Resistant Tuberculosis in Different Models of Delivery in South Africa.
2. Manfred Hofstaetter, PhD Student, UMIT - University for Health Sciences, Medical Informatics and Technology, Austria & Harald Stummer, Head of Institute and Professor, UMIT - University for Health Sciences, Medical Informatics and Technology, Austria. Successful Pharmacy Management from a Customer Perspective in Times of Progressive Market Liberalization and Digitalization - Influencing Factors on the Example of Austria.

**20:30-22:00 Dinner**

**Wednesday 26 June 2019**  
**Mycenae and Island of Poros Visit**  
**Educational Island Tour**

**Thursday 27 June 2019**  
**Delphi Visit**

**Friday 28 June 2019**  
**Ancient Corinth and Cape Sounion**

**Hannah Ashwood-Smith**

Nurse Educator, Camosun College, Canada

&

**Lorelei Newton**

Nurse Educator, Camosun College, Canada

***Poverty is our Biggest Enemy: A Multi-Country Study on Canadian Nursing Student's Global Health Knowledge Acquisition during International Learning Experiences***

International Learning Experiences (ILEs) have been a cornerstone of global health education for nursing programs throughout the world (Kulbok, Mitchell, Glick and Greiner, 2012). Camosun College's Nursing Department (Victoria, B.C, Canada) has conducted numerous ILEs in developed and developing countries for over a decade with only anecdotal evidence to support these rich yet challenging international placements.

Global health and education literature provide guidance for ILEs (Kulbok et al, 2012) in addition to shared lessons in educational experiences for student nurses internationally (Shishani, Allen, Shubnikov, Salman, LaPorte, and Linkov, 2012) however, there is little research exploring the student's global health knowledge acquisition, specifically in relation to social determinants of health, tropical disease transmission, and health promotion.

An interpretive descriptive research study was conducted in the spring of 2016 to address important knowledge gaps and evaluate student's learning in two countries, New Zealand and the Philippines. First and second year Canadian degree nursing students (n=21) were accompanied by instructors for a five-week clinical practicum. A combination of data collection techniques were employed using an adapted version of Riner's framework (Riner, 2011). Four focus group discussions (n=19), global health themed critical reflections (n=24), a fluid survey (n=12) and a structured questionnaire (n=60) were used to address four study objectives examining host countries perspectives of the ILEs and the Canadian nursing student's personal, and professional growth with a strong emphasis on global health concepts.

Rich data emerged from this study revealing the student's deeper understanding of the social determinants of health and their impact on vulnerable population's morbidity and mortality. Poverty, inequitous health care resource allocation, and profound cultural differences were dominant themes. Cultural comportment and the ethics of nursing abroad were multifactorial issues highlighted. Health promotion was a critical dimension revealing student's enhanced knowledge levels regarding upstream thinking and effective health education strategies; specifically

related to dengue fever, diarrheal disease, respiratory illnesses (asthma, pediatric community acquired pneumonia, tuberculosis), cardiac disease and diabetes.

It is anticipated that these research findings, coupled with recommendations for best practice will help inform the debate on the merits and challenges of ILEs, ensuring that vital global health knowledge is deeply embedded into future international nursing programs.

**Ivan Bosnjak**

Doctor of Medicine, Community Health Centre Zagreb, Croatia

&

**Marija Bosnjak**

Employee at Ernst & Young, University of Zagreb, Croatia

## **Lean System Management in Hospitals**

Statement of problem: Healthcare industry is experiencing increasing pressure of constantly rising costs as science makes new horizons through new drugs and technologies so employing resources in effective manner has been an never more challenging task. LEAN system management in hospitals can contribute to an effective management costs and increase results. We compared industrial LEAN model management and its implementation in hospitals. LEAN management has its roots in Just in time management implemented by Toyota company through which this company became fierce competitor to United States car industry. The aim of Lean is to eliminate waste and reduce production time. The basic principle of LEAN philosophy is to determine where the value is added in the process and where it is not. LEAN consists of several tools: five S, kaizen events, standardized work, kanbans, spaghetti diagrams. Spaghetti diagrams are used to track movement of employees, materials and patients. Effective implementation can reduce time used for different needs of patients and tasks of employees and this is an example of lost effectiveness that can be eliminated. Kaizen events consist of project team compromised of hospital staff, whose goal is to solve efficacy problem by determining the problem and reasonable output and then implement new ideas. Example would include disorganized inventory of hospital pharmacy so the time of drug delivery is increased. The project team can locate the problem and suggest inventory changes. Market competitive companies must constantly innovate and implement new ideas to win market share. Those innovations can sometimes be used in healthcare industry and effective implementation can increase quality of health service hospitals give, and also reduce never ending rising costs, a challenge hospital management encounters.

**Ging Chan**

Associate Professor, University of Macau, Macau

**Yan Guo**

Master Student, University of Macau, Macau

**Yunfeng Lai**

Postdoctoral Fellow, University of Macau, Macau

**Hao Hu**

Associate Professor, University of Macau, Macau

&

**Carolina Ung**

Professor, University of Macau, Macau

## **A Comparative Study on Drug Utilization for Respiratory Diseases at Rural Primary Medical Institutions and Urban Primary Medical Institutions in China**

**Objective:** With the rapid development of hierarchical diagnosis and treatment in China, primary medical institutions are playing an increasingly important role in the management of chronic diseases. This study explored the characteristics of pharmaceutical services for respiratory diseases in Chinese primary medical institutions, based on the comparative analysis of drug utilization between urban and rural primary medical institutions in China.

**Methods:** The data of drug utilization of respiratory diseases was collected from 1,600 rural primary medical institutions and 9,057 urban primary medical institutions between 2014 and 2018 in China. Screening the top 50 drugs of annual sales in urban and rural primary medical institutions. And the characteristics of drug utilization were analyzed from three dimensions, including drug prescription, type and dosage form. Independent-samples t-test was used to compare medication situation of urban and rural primary medical institutions.

**Results:** Based on the drug utilization research of the top 50 drugs, in terms of drug prescriptions, rural primary medical institutions mainly used prescription drugs and their market share increased continuously, from 55.65% in 2014 to 61.14% in 2018. Urban primary medical institutions were dominated by over-the-counter (OTC) drugs, but their market share declined from 64.08% in 2014 to 55.41% in 2018. In terms of drug types, the proportion of Chinese patent medicines (CPM) in rural primary medical institutions decreased from 65.43% in 2014 to 61.31% in 2018. The proportion of CPM in urban primary medical institutions was 73.85% in 2018, an increase of about 3.5% over 2014. In terms of drug dosage form, the proportion of injections in rural primary medical institutions was about 40%, and that in urban primary medical institutions was about 23%. From the perspective of overall sales, the sales of CPM in rural primary

medical institutions was significantly higher than that in urban primary medical institutions ( $P<0.05$ ); the sales of prescription drugs in rural primary medical institutions was significantly higher than that in urban primary medical institutions ( $P<0.05$ ).

**Conclusions:** The drug utilization situation of rural primary medical institutions and urban primary medical institutions in China is significantly different, and the characteristics of pharmaceutical services in different terminals should be further explored.



**Omar Da'ar**

Assistant Professor, King Saud bin Abdulaziz University for Health Sciences, Saudi Arabia

**Khalid Alahmary**

King Saud bin Abdulaziz University for Health Sciences, Saudi Arabia  
&

**Majid Alsalamah**

King Saud bin Abdulaziz University for Health Sciences, Saudi Arabia

## **Association between Emergency Department Visits and Predisposing, Enabling, Need, and Reinforcing Social Factors in an Acute Setting**

**Background:** No primary evidence has hitherto existed of predisposing, enabling, need, and social reinforcing factors influencing Emergency Department (ED) visits in an acute setting in Saudi Arabia. This study set out to provide evidence by examining the association between ED visits and these factors.

**Methods:** A cross-sectional study that randomly selected representative patients visiting ED services at King Abdulaziz Medical City in Riyadh from December 2016 to January 2017. Patient and facility validated questionnaires were used. Descriptive analysis and multivariate analysis were carried using STATA version 12.

**Results:** Average ED visit was 3.8 in 12 months with a range of 50 visits. Visits were concentrated on a few small discrete and non-negative integer values, but without an explicit upper limit. Perceived 'good' health (P 0.026; 95% CI, 0.1334, 2.0547), 'very good' health (P 0.006; 95% CI, 0.4288, 2.5432), and 'excellent' health status (P = 0.007; 95% CI, 0.5532, 3.5230) were associated with ED visits increasing by 9.4%, 48.6%, and 103% respectively. Prior hospitalization was associated with 2.7 times higher ED visits. Household income more than \$800 was associated with ED visits decreasing by between 49% to 70%. Getting useful advice on social matters was associated with 27% increase in ED visits, getting help when sick was associated with 9.4% decrease in ED visits. .

**Conclusion:** Findings reveal evidence of drivers of ED visits with social conditions gradation. Future studies are needed to establish causality of ED visits and the covariates to inform the balance between frequencies of visits versus medical need.

**Steffani Driggins**

Associate Professor, Allen University, USA

&

**Kareem Muhammad**

Assistant Professor, Allen University, USA

## **Metabolic Syndrome Study at a Historically Black College/University in South Carolina**

Statistics in the United States of America have indicated that metabolic syndrome (obesity, high blood pressure, high cholesterol and stroke) is prevalent among young adults (Nolan et al., 2017). Even though research papers indicate that the prevalence of metabolic syndrome is low in African Americans, other data indicates that African Americans are at a higher risk for cardiovascular disease and having a stroke (American Heart Association, 2018). Also, it is noted that African Americans have a higher rate of type 2 diabetes mellitus (Gaillard, 2018). Thus, there is a need to educate the population of students at Allen University, a Historically Black College/University, about the risks of high blood pressure, high blood glucose levels, and high cholesterol levels. Approval from the institutional review board at Allen University was granted for an online anonymous metabolic syndrome questionnaire that was completed by currently enrolled students at Allen, using the community based participatory research (CBPR) methodology (Wallerstein and Duran, 2006). The questionnaire was completed by students enrolled at Allen during the spring 2018 semester and the fall 2018 semester. A total of eighty-one students have completed the metabolic syndrome questionnaire. The results indicate that some students had a family history of diabetes (67%), high cholesterol (21%), heart attack (32.1%), and stroke (15%). Also, 28.4% of the students know one of the main tests used to detect diabetes, 31% knew how high cholesterol is detected, 48% knew how a heart attack occurs and 52% knew how a stroke occurs. Based on the results from our study, we hypothesize that introducing a multi-layered educational campaign centered around metabolic syndrome at Allen will increase student knowledge of the risk factors and decrease the number of students that are diagnosed with high blood pressure, high blood glucose levels, and high cholesterol levels.

**Yawei Guo**

Master Student, Shandong University, China

## **Comparing the Economic Burden of Diabetes Mellitus in Children with and without Medical Insurance: A Cross-Section Study in Shandong Province**

**Objective:** The incidence of diabetes mellitus in children is rising in all countries. This apparent epidemic is mainly due to the increased rates of obesity in children, carrying enormous long-term public health implications, including the economic burden. However, previous studies focused on the composition and influencing factors of hospitalization costs, or the economic burden of diabetes mellitus among the whole population. This study aims to compare the economic burden of diabetic patients with and without medical insurance (MI) in children, from the aspects of types of medical costs and diabetic comorbidities in Shandong province.

**Methods:** The data was obtained from the hospitalization information system of 297 general hospitals in 6 urban districts of Shandong Province. We identified 165235 patients with diabetes mellitus, including 1404 children. The information on demographics, comorbidities, types of diabetes, age of patients, type of health insurance, reimbursement, and hospitalization costs were extracted and checked. Differences between groups were analyzed by Student t test. STATA14 software was used for analysis.

**Results:** The mean age of diabetes mellitus in children was  $8.90 \pm 0.15$  years. The highest prevalence was type 1 diabetes mellitus (62.1%), followed by type 2 diabetes mellitus (13.4%). The children with MI has the average total hospitalization expenditure of 5678.16 RMB and hospitalization days of 7.35, compared with the children without MI of 4632.37RMB and 6.28 days. Meanwhile, the insured children's mean out-of-pocket (OOP) cost (2975.26 RMB) was lower than that of the children without MI (4632.37 RMB), significant at 0.01 level. The insured children's mean total hospitalization expenditure was 5678.16 RMB, and they incurred more costs for drug, treatment, and inspection ( $p < 0.01$ ). Insured children had higher costs when associated with ketoacidosis diseases, diabetic nephropathy, and upper respiratory tract infection ( $p < 0.05$ ).

**Conclusion:** Diabetic mellitus in children with MI have higher hospitalization costs and longer hospitalization days than those without MI, but uninsured patients carry a heavier OOP burden. As a result, the MI system in China needs further improvement to reduce the economic burden of diabetes, especially targeting children without MI and the diabetes mellitus patients with comorbidity.

**Manfred Hofstaetter**

PhD Student, UMIT – University for Health Sciences, Medical Informatics and Technology, Austria

&

**Harald Stummer**

Head of Institute and Professor, UMIT – University for Health Sciences, Medical Informatics and Technology, Austria

**Successful Pharmacy Management from a Customer Perspective in Times of Progressive Market Liberalization and Digitalization – Influencing Factors on the Example of Austria**

*Background*

The pharmacy market in Austria is subject to a strong structural adjustment. There is market pressure because of (a) standardization of the relevant legislation within the European Union (EU), (b) the trade concentration including innovative, digital online businesses, (c) an increasing competitive awareness and (d) price sensitivity in the general public. The task of pharmacists is a successful positioning within the above-mentioned business environment. The study's aim is – from the point of view of pharmacy customers – (a) to uncover the relevant factors for a successful market positioning, (b) to determine which of these factors influence significantly the likelihood to become a regular and delighted pharmacy customer, leading in an enhanced overall satisfaction.

*Method/Results*

Five heterogeneous pharmacies were chosen for the stratified random sample (n= 698), collected over a period of 8 month. Immediately after their pharmacy visit, costumers were requested to rate (their satisfaction with) individual pharmacy services. The survey compiled the respective individual performances and output quantity from 42 individual services (items), aggregated into 11 bundles and subsequently clustered in 3 groups that constitute pertinent factors of the characteristic 'overall satisfaction'. The overall satisfaction of the customers is ensured, highly significant, by the fulfilment of pharmacy core competences such as 'service quality' or 'team & pharmacy appearance', special formulations, regular customer programs and a local proximity of the pharmacy (accessibility without a car). In addition, product availability and the area of IT communication & supply (internet) have a significant impact on the overall satisfaction of pharmacy customers.

### *Conclusion*

The result of the research shows that pharmacy customers have a highly significant interest in a local proximity of the pharmacy (accessibility without a car), in a word, the pharmacy should be around the corner or at least, easy to reach by public transports. Fulfilling additionally the core competences of a pharmacy and offering an attractive regular customer's program is crucial to keep and attract new regular customers. However, to what extent these criterions will be replaced in the future by the significant factor IT communication & supply (Internet) depends largely on the future legal framework and the period under consideration. Regardless of changing customer expectations, the lowest possible transaction costs have to be offered. How much and in what constellation in the future the individual factor groups influence overall satisfaction has to be investigated in further research. Pharmacies will ensure overall customer satisfaction, if they are already implementing the increasing digitization in their "pharmacy" business model. Thus they are building the basis for the lowest possible transaction costs for customers across all age groups and therefore for a future-oriented customer-centered management.

**Melinda Ickes**

Associate Professor, University of Kentucky, USA

&

**Jakob Hester**

Wellness Specialist, University of Kentucky, USA

### **E-cigarette Use among Emerging Adults: Is Juuling Just a Trend?**

**Purpose:** This study examined: (1) e-cigarette use patterns; (2) sociodemographic and personal factors associated with current and intention to use e-cigarettes; and (3) attitudes toward e-cigarettes among emerging adults transitioning from high school to college in the U.S. We strategically investigated Juul, a pod-based e-cigarette which currently has 80% of the market share in the U.S.

**Methods:** A longitudinal online survey was administered at three time points (T1-August, T2-November 2018, and T3-April 2019) to a purposive sample of emerging adults aged 18 or older transitioning from high school to a large public university in the southeast United States. Students were recruited ( $N=4,500$ ) via university email to complete an online survey related to e-cigarette patterns of use and attitudes. An effective sample size of 1,784 participants was obtained for T1. Descriptive statistics summarized use patterns and attitudes. Logistic regression evaluated associations among sociodemographic characteristics and e-cigarette use and intention to use. Data analysis was conducted using SAS (alpha of .05).

**Results:** At T1, 43% reported ever and 24% current (past 30 day) Juul use. White/non-Hispanic, those planning to join a fraternity, and current cigarette smokers were more likely to be current Juul users. White/non-Hispanic, those intending to live on campus, planning to join a fraternity, and current cigarette smokers had higher intentions of using Juul. Current Juul users were less likely to agree that Juuls are a tobacco product, that Juuls are addictive, Juul smoke is dangerous to breathe, Juuls are not as harmful as conventional cigarettes or e-cigarettes, and Juuls are safer in terms of secondhand smoke compared to conventional cigarettes or e-cigarettes, compared to non-Juul users. Additional data will be presented over time from T1 to T3.

**Discussion:** Juul use continues to be an issue, particularly as 42% of those transitioning from high school already report ever use. There is a need to target at risk groups, including White/non-Hispanic, those likely to join Greek organizations, and current cigarette smokers. In addition, misperceptions regarding the addictive nature and perceived harm of Juul use need to be addressed by college health professionals. Many emerging

adults do not consider Juul as a type of e-cigarette, so the language used is important to consider.

**Shuhan Jiang**

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## **Unassisted Smoking Cessation in China: A Population-Based Study**

### *Objectives*

The present study examines the prevalence of unassisted smoking cessation among Chinese urban smokers and to examine some of the factors important in the decision to quit.

### *Methods*

A cross-sectional survey employing multi-stage, sampling was conducted. 5,782 participants were recruited from six cities in China. Survey respondents reported their smoking cessation status and related individual and environmental variables. Both unadjusted and adjusted methods were considered in analyses.

### *Results*

The unassisted prevalence was 87.6% in quit attempts, and was in success. Logistic regression analysis showed those who engaged in physical exercise and who had more belief in their ability to quit were more than twice as likely to do so than comparable reference groups. Exposure to tobacco advertising was negatively associated with both unassisted quit attempts and success. By contrast, exposure to anti-tobacco information was positively associated with unassisted quit attempts while household and workplace smoking restrictions were negatively associated with unassisted attempts to quit.

### *Conclusions*

Smoking cessation programs and policies in China need to pay greater attention to the social and cultural norms which perpetuate high levels of smoking.



**Lars-Ake Levin**

Professor, Linköping University, Sweden

&

**Therese Eriksson**

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## **Effects of a Value based Reimbursement System – An Example from Stockholm, Sweden**

### *Background/Purpose*

It has been argued that poorly designed reimbursement systems could lead to increased health care costs without corresponding increase in patient outcomes. We investigate the effects on health care costs and patient outcome following the introduction of a value based reimbursement system (VBRS) in Stockholm, Sweden in 2013.

### *Methods*

Data on patient outcomes and associated health care costs for patients living in Stockholm and had undergone spine surgery between 2006-2016 were extracted from Stockholm county council register and the quality register of spine surgery (Swespine). Data from the two registries were linked using the unique personal identification number of each patient. Segmented regression analysis was used to compare costs and EQ5D-index before and after the introduction of VBRS.

### *Results*

Following the introduction of VBRS the number of surgeries increased with 17 percent and the total cost increased with 16 percent the three first years. The mean cost per surgery decreased with 7 percent ( $<.0001$ ) and the health care cost over the full care episode decreased with 28 percent ( $<.0001$ ). Thus, the average cost per surgery shows a decreasing trend after the introduction of VBRS. The introduction of VBRS had no significant effect on patient outcome.

### *Conclusion*

The introduction of VBRS in Stockholm increased the total health care costs. This increase was however accompanied by an increase in patients undergoing surgery. Thus, average cost decreased and access to care increased. The use of VBRS in health policy comes with both promises and pitfalls but considering that there were no negative effects on health and the decreased cost per surgery, elective spine surgery in Stockholm county can be considered more efficient after implementing VBRS.

**Tulasi Malini Maharatha**

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## **Horizontal Inequity in Child Health Care Services in India: A Cross Sectional Study Using the Demographic Health Survey 2015-16**

### *Background*

Children are vital to the nation's present and its future. There has been a great deal of progress in reducing childhood death and diseases. But the countries should not be blinded by these facts, because several indicators of children's health point to the need for further improvement. Child health target for SDGs shout to reduce the preventable death of neonatal mortality to at least as low as 12 per 1000 live births and children under-5 mortality to at least as low as 25 per 1000 live births by 2030. One of the major impediment towards the attainment of Sustainable Development Goals is the prevalence of inequitable utilization of child health care services, this issue is more prominent in the low and middle income countries. This could be mainly due to inadequate policy initiatives. Therefore, analysis of child health indicators aids identification of hotspots where policy lags behind to improve the equitable access for utilization of child health services.

### *Objective*

The present study will approach the issue of equity in child health care by estimating and explaining deviations from horizontal equity in India. Further, the study attempts to determine the contribution of need-based and socioeconomic determinants of the utilization of child health care services.

### *Data and Methodology*

The study employed the recent Demographic Health Survey (DHS) 2015-16 of India (n = 206,292). Probit model is being used because our response variable (treatment seeking for child) is qualitative in nature. The model was applied to estimate need-predicted child health care utilization. Furthermore, need-standardized health care utilization is assessed through indirect standardization method. Concentration index is measured to reflect income-related inequity of health care utilization. The horizontal inequity was calculated using the gamut of variables, they can be categorized as (i) the individual socioeconomic status, (ii) the health care needs, (iii) non-need factors as well as (iv) health care utilization of

child. Finally, decomposition analysis of the concentration index for need-standardized health care utilization was applied to assess the relative contribution of socioeconomic factors of child health inequities.

### *Results*

Indirect standardization of the utilization of child health care services reveals a pro-rich distribution with a concentration index of 0.082, while the unstandardized concentration index was noted as 0.08. This shows that the contribution of need based factors towards child health inequity is less (-0.002) compared to non-need based factors (-0.48). Additionally, decomposition analysis reveals that the prevalence of health inequity is significantly determined by wealth status, mother's education, Integrated Child Development Services (ICDS) and place of residence. Through the findings of this study, it is recommended that, there is a greater need of prioritization of policy and subsequent increase in public investments towards child health.

**Giuliano Masiero**

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**Michael Santarossa**

PhD Student, University of Pavia, Italy

&

**Fabrizio Mazzonna**

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## **Does Social Expenditure Mitigate the Effect of Environmental Shocks on Health?**

### *Objectives*

The effectiveness of local government's social expenditure in mitigating the future use of health care resources is a relevant policy question for the National Health Service. Whether social expenditure may substitute, complement, prevent or postpone the use of NHS resources is seldom investigated in the health economics literature, and previous studies lack evidence on the impact of local government's social expenditure on health care use. This paper exploits exogenous environmental shocks (daily temperatures and earthquake events) to explore the relationship between local social expenditure and hospital admissions for different causes of disease and different social groups.

### *Data and Methods*

To analyze the impact of social expenditure on hospital admissions we exploit detailed municipality-level data from Italy, where decisions on social expenditure are delegated to local governments and, therefore, provide a large source of heterogeneity across the country. This dataset is then combined with data from the universe of hospital admissions for mental health and cardiovascular diseases for the period 2001-2015 aggregated by municipality. We use daily data on extreme temperature shocks and earthquake occurrences to identify exogenous hospital admission surges, and analyze if heterogeneity in past social expenditure causes differences in hospital admissions when climate and seismic shocks occur. This strategy allows us to overcome endogeneity due to reverse causality between hospitalizations and social expenditure. Finally, the detail of hospital admission data allows us to explore the effects of social expenditure by socio-demographic groups.

### *Results*

Preliminary findings suggest that social expenditure mitigates hospitalizations with age-group specific effects. People in the age group 35-65 seem to benefit more from social expenditure than the oldest age cohorts. This is likely due to the nature of local social expenditure, which enhances families' financial well-being but is rather ineffective for severe health problems.

**Carine Milcent**

Professor, Paris School of Economics, France

### **Impact of Private Health Insurance on a Public Healthcare System: The Case of Cesarean Deliveries**

According to the health economics literature, medical practices respond to the source of hospital payments and the rules that govern them. Here, we study the impact of supplementary private health insurance within the DRG-based financing of French hospitals. We use differences between the public and private hospital sectors in managers' and doctors' incentives (in terms of potential additional payments) and examine their effect on the practice of cesarean deliveries. We mobilize exhaustive delivery data from a French district over a 7-year period (2008-2014) and consider factors that are known to influence obstetric practices. Our empirical results show that, although private hospitals are financed by a single public payer, like those in the public sector, they perform significantly more cesarean deliveries than public hospitals. This result is partially explained by additional payments covered by private health insurance and charged by private but not public hospitals.

**Tina Montreuil**

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## **School-Based Mental Health: Barriers, Evidence, and the Need for a Policy-Oriented Approach**

**Background:** The research literature in both education and child and youth mental health (MH) clearly indicates that approximately 20-25% of children and adolescents have diagnosable mental health problems and 80% do not receive adequate treatment (Waddell et al., 2005). Factored into this situation are the long waitlists for child and adolescent MH services in the community, in addition to limited MH services in schools that employ MH professionals. Moreover, educators rank mental health problems as a key issue and there exists a paramount of recognition that MH issues are associated with declining achievement. Hence, schools are where children and youth are likely to receive MH services (Rones & Hoagwood, 2000) through the promotion of positive MH and overall wellbeing as schools represent the most effective place to provide MH services (Crisp, Gudmundsen & Shirk, 2006), a strongest return on investment.

**Methods:** Following a policy-oriented approach, a universal curriculum-based program was implemented in schools through guided instruction, sections on personal reflection, and group activity exercises with the aim to improve overall wellbeing through the acquisition of bettered social-emotional skills.

**Results:** Regression analyses, independent t-tests and ANCOVA's, using a randomized control trial design, suggested that the program resulted in improved mental health outcome and wellbeing ( $p < 0.05$ ).

**Conclusions:** Findings validate the effectiveness of universal school-based mental health intervention. Furthermore, the findings support the need for universal programs and policy-oriented approaches in promoting school-based MH and wellbeing.

**Implications:** The role of School Psychologists as facilitators of school-based MH will also be discussed. The care and support of children and youth are the collective responsibilities of schools as much as other service providers and agencies. The proposed discussion has the potential to address and dismantle key barriers to the successful implementation of school-based mental health promotion and therefore, prevention of mental health issues; which can greatly inform our decision-makers in considering evidence-based mental health policy development.

**Helen Naug**

Senior Lecturer, Griffith University, Australia

**Peta Coles**

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&

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## **Health Literacy as an Important Consideration for Intervention Programs**

To date there have been numerous workplace health program interventions targeting transport workers' health and well-being, however most are short lived and don't effectively address the population. This study investigated transport workers' health and how their uniqueness as a population requires tailored interventions.

Twenty-eight Bus drivers from two depots contributed to the study and completed a pre-intervention health questionnaire in person or via an online link. The survey contained a health literacy section, in addition to standard health status survey questions. The data was then analysed using SPSS 24 and two simple linear regressions were used to identify associations between average health literacy scores and fruit and vegetable intake, as well as health literacy and structured exercise. Thematic qualitative analysis was used to analyse the open response question results at the end of the survey.

The study demonstrated a significant positive correlation ( $p < .049$ ) between average health literacy scores and fruit and vegetable intake among the bus drivers. The correlation between health literacy and structured exercise however, was not significant. Furthermore, a positive linear trend was established between age and health literacy and no correlation was evident between health literacy and education level. Both perceived and real barriers were identified from the thematic analysis on the open response questions at the end of the survey. The qualitative results of the study are provided below, pages 2 & 3.

From the data collected in this thesis it indicates the importance of establishing a thorough pre-intervention assessment of a population before implementing an intervention. It was identified that assessing an individual's health literacy was vital in accurately being able to tailor an intervention, and address specific areas of health behaviour that are potentially lacking. It was found to be inaccurate to assume that individuals with higher education levels would have a higher health literacy level. Thus, indicating the additional importance of health literacy as a tool in tailoring appropriate interventions.



**Justyna Roj**

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Poland

### **Financial Performance Index for University Hospitals: DEA Approach. Case of Poland**

Hospitals' financial conditions are very important, in terms of their availability. Moreover, in Poland, inpatient's services consume is an important part of National Health Fund resources. The objective of the study is to use a financial performance index (FPI) for regional hospitals using Data Envelopment Analysis (DEA), and to evaluate and then to compare also this measure with various financial ratios commonly used to indicate performance levels. This employed approach of FPI is based on the financial ratios and DEA method and was proposed by Ozcan and McCue. This method allows to overcome the weaknesses of financial ratios analysis. The DEA model generated FPI scores are based on four maximizing oriented financial performance ratios: return on assets, operating cash flow per bed, operating margin and total asset turnover ratios. The research has been conducted on the nonprofit university Polish hospitals, using data covering the period of the 2017 year. The results will allow to identify efficient and poor performing hospitals and also to provide their financial ratios characteristics and optimal combination.

**Edina Sinanovic**

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### **Cost of Treatment for Drug-Resistant Tuberculosis in Different Models of Delivery in South Africa**

**Setting:** The cost of multi-drug resistant tuberculosis (MDR-TB) treatment is a major barrier to treatment scale up in South Africa.

**Objective:** To estimate and compare the cost of treatment for rifampicin-resistant tuberculosis (RR-TB) in South Africa in different models of care in different settings.

**Design:** We estimated the costs of different models of care with varying levels of hospitalisation. These costs were used to calculate the total cost of treating all diagnosed cases of RR-TB in South Africa, and to estimate the budget impact of adopting fully or partially decentralised versus a fully hospitalised model.

**Results:** The fully hospitalised model was 42% more costly than the fully decentralised model (US\$ 13 432 vs. US\$ 7 753 per patient). A much shorter hospital stay in the decentralised models of care (44 - 57 days), compared to 128 days of hospitalisation in the fully hospitalised model, was the key contributor to the reduced cost of treatment. The annual total cost of treating all diagnosed cases ranged from US\$ 110 million in the fully decentralised model to US\$ 190 million in the fully hospitalised model.

**Conclusion:** Following a more decentralised approach for treating RR-TB patients could potentially improve the affordability of RR-TB treatment in South Africa.

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&

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## **Urbanisation and Prevalence of Non-Communicable Diseases in Malaysia**

**Background:** Health is vital for individuals to become better students, better employees and to enjoy optimal quality of life. As people become more urban, non-communicable diseases (NCDs) are more prevalent and the associated morbidity and mortality are on an upward trend. Despite allocating significant budget for its health sector, Malaysia too faces a similar predicament of higher NCDs prevalence.

**Purpose of Study:** Given that the Malaysian urban population is now about 75% of total population, the negative externalities rising from urbanisation such as poor lifestyle choices and pollution is often linked with deteriorating population health. This paper aims to establish the factors that contribute to the urban health outcomes, specifically NCD prevalence among the urban population.

**Methods/Theory:** This study employs the Logistics Regression Method and both diabetes and high blood pressure is used as a proxy for NCDs for the purpose of this paper

**Findings:** Demographic, socioeconomic and lifestyle-related factors contribute to growing NCD prevalence among the urban population in Malaysia. Higher education and a steady income contributes to better urban health. Individuals with comorbidities must explore other avenues in addition to embracing a healthier lifestyle.

**Conclusion:** Urban health has unique challenges, with widening income and socioeconomic inequalities and health policies must be able to cater to the diverse needs of this urban population.

**Min Yu**

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## **Impact of Conditional Cash Transfer Scheme on Maternal and Child Health in China Rural Area: A Qualitative Semi-structured Interview Study**

**Background:** A conditional cash transfer scheme (CCTS) supported by the United Nations International Children's Emergency Fund (UNICEF) has been designed to promote women and children health of low-income families by incentivizing their utilization of maternal and child health services in China rural area since 2014. Those beneficial families can be rewarded cash when they accept those designated health interventions, i.e. institutional delivery, physical examination, and breastfeeding.

**Objective:** The objective of this study is to explore the stakeholders' perceptions of the CCTS's impact on the health behavior and outcome among beneficial women and children in rural area.

**Methods:** A series of semi-structured interviews were conducted with beneficiaries of the scheme, local maternal and child healthcare providers, and relevant policy makers in health sectors. Interviewees were asked to discuss the impact of CCTS on the utilization and outcome of maternal and child healthcare. All interviews were audio recorded, transcribed, coded, and analyzed using NVIVO 11.0 Pro. Themes were categorized according to the theoretical framework by three stakeholder groups.

**Results:** Among antenatal mothers receiving the designated interventions, there was a widespread perception of CCTS that it played a noteworthy improvement in their health knowledge and behavior, which is helpful for better health status for themselves and better nutrition practice, motor & cognitive development of their children. Local healthcare providers reported that the scheme helped enhancing the relationship between them and the beneficiaries, and reducing the probability of maternal and neonatal deaths. Health policy makers from government described the scheme as a strengthen tool to eliminate the disparity in both utilization and outcome of maternal and child healthcare between developed and developing areas in China, which was fitted well with Healthy China 2030 Plan committed to better and equal healthcare. However, concerns that were most frequently mentioned and might reduce the impact of the scheme included the sensitive amount of cash and the flexible approach to target the beneficiaries according to the variety of the local socio-economic background.

**Conclusion:** CCTS is an effective approach to improve the poor women and children health status by triggering the need and utilization of services in rural area. It is important to develop more flexible standard and procedure for targeting beneficiaries, and improve quality of local

obstetric and antenatal care. Long-term and quantitative evaluations are needed in the future.

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**Molecular Multiplex Testing for Acute Gastroenteritis: Transformative Effect on Enteric Disease Management and Surveillance**

The global burden of diarrhea is tremendous. In 2012 WHO reported that diarrhea kills 2,195 children every day—more than AIDS, malaria, and measles combined. While this burden is greatest in developing countries, acute gastroenteritis (AGE) is a significant problem across the spectrum of first world institutions - whether it is intensive care units in tertiary hospitals or childcare centers.

AGE interventions are many including water/food safety, sanitation, prompt treatment and these rely on laboratory capability to identify enteric pathogens. The accuracy and timing of laboratory results strongly influences outcomes. Traditional laboratory methods have multiple limitations, particularly with low sensitivity, limited pathogen targets and long turnaround times.

To overcome these limitations, a 19 gastrointestinal pathogen molecular assay (19-GIPMA) was developed and introduced in December 2018 to be the first line test used on all diarrhea samples in Newfoundland and Labrador. 19-GIPMA has same day turnaround and like most molecular approaches, improved sensitivity.

After 5 months, 19-GIPMA resulted in a 470% detection increase in detecting enteric pathogens when compared to the previous 3-year average. This improvement has allowed for targeted culture to increase the number of strains isolated to better guide public health actions and support clinicians to stop empiric antibiotics and to start targeted therapy.

Health care enhancements are often considered effective when there is a 10-30% improvement in outcome. New technology resulting in a preliminary 470% difference, especially when it is quicker and less expensive, is potentially transformative. Whether this translates to a decreased burden of diarrheal illnesses remains to be seen.

**Adel Zeglam**

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## **Is Autism a Major Public Health Concern? Libyan Perspective**

Over the past decade, autism has emerged as a major public health concern all over the world including Africa.

Autism begins early in life (almost always before 3 and rarely before 5). Most children with autism show signs of the disability from birth though there are some cases where early normal development is followed by a deterioration of social, cognitive, behaviour and communication skills. In these instances deterioration following normal language development is usually the first indication of the problem.

Recent evidence that the prevalence of diagnosed ASD may be increasing and that early diagnosis and intervention are likely associated with better long term outcomes has made it imperative that Pediatricians increase their fund of knowledge regarding the disorder. The apparent increase may represent a combination of several factors, including changing criteria with inclusion of milder forms in the spectrum of autism, a higher public and professional recognition of the disorder, and a true rise in prevalence.

There are several areas in child health in which early detection measures are likely to make a critical impact upon the health and education of the child or at least diminishing the impact of developmental disabilities. Autism is one of these areas. Libya has not managed yet to solve the problem of provision of services for children with learning difficulties and behavioral problems including ASD.

ASD is one of the most serious neurodevelopmental conditions in Libya, with significant family, and financial problems but unfortunately decision-makers have failed to provide the necessary and proper services for those children. Many Libyan kids with autistic spectrum disorder are kept locked up at home - some of the time tied up, quite often undiscovered or wrongly diagnosed. Efforts to increase awareness among Libyan people are barely starting. Many parents resort to these outrageous measures since they have no other choices. The difficulty in obtaining specialist advice is another problem and it is not surprising that in Libya many children do not reach a special school to get the luxury of special education provision.

Autism in Libya as well as in most Arab and African countries is not yet a priority, neither with respect to research nor with respect to services. This might be because the field of child neurodevelopment, psychology and psychiatry is almost lacking. Another reason is the fact that

prevalence studies are deficient. This is because of the lack of funding in economically burdened country or because of lack of concern for research policy. The deteriorating security situation and the ongoing armed conflict has had an adverse impact on Libya's health sector by hampering healthcare provisions.

It is possible to take a negative and passive view and say "There are far worse problems in many countries in Africa-starvation, housing, sanitation, water supply and war- so why divert efforts?" Or "There are other problems that can often be helped by simple procedures, and we don't see much behaviour difficulties around".