

Malta Journal of Health Sciences - Journal of the Faculty of Health Sciences
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Foreword

It is my great pleasure to welcome all of you participants to this - the National Symposium of Health Sciences. This event also marks the fourth Anniversary of the granting of Faculty status by the University of Malta. We could not allow this milestone to pass without marking it with a suitable celebratory event. In order to continue in this celebratory vein, we have also taken the opportunity to launch our new Journal – the Malta Journal of Health Sciences (MJHS) – which sees the light of day as an online journal, with a printed supplement, as Proceedings of this Symposium.

I hope that such an event will become a regular forum where valid research is presented to mark the great strides taken by the members of the Faculty to reach the highest standards. I am thoroughly encouraged in this hope by the number of abstracts that have been submitted on this occasion.

It is also my pleasure to announce the Dean's awards for academic year 2013/4. This is the first time that these awards will be presented to high achieving students.

All this would not have been possible without the invaluable and tireless work of both the Symposium Organising Committee, and the MJHS Editorial Board. I thank all the members of both Committees for their enthusiasm and hard work in the organisation of this event, and I extend a special thanks and congratulations for a job well done to, in particular, Dr Daniela Gatt, who, as Editor-in-chief, has had the daunting task of ensuring that both the Journal and the Proceedings were finalised in time for the Symposium. My sincere thanks also go to our guest speaker, Professor Clive Mulholland, who has very graciously and generously accepted to share with us all his experience in his specialised field by giving the keynote speech.

Finally my heartfelt thanks to all the participants and registrants – I wish you every success.

Professor Angela Xuereb Anastasi,
Dean

National Symposium of Health Sciences and Dean's Awards

Thursday, 24th April 2014

Programme

- 1000** Registration and Coffee
- 1000** Poster Presentations
- 1030** Welcome of Guests and Participants by the Deputy Dean of the Faculty of Health Sciences, Professor Helen Grech
- Opening of the National Symposium of Health Sciences**
- Launch of the Malta Journal of Health Sciences (MJHS)**
- Address by the Dean of the Faculty of Health Sciences, Professor Angela Xuereb Anastasi
- Address by the Rector, Professor Juanito Camilleri
- Address by the Hon. Minister of Education, Mr Evarist Bartolo MP
- 1105 Presentation of the Dean's Awards**

Keynote Speech

- 1125** *Survival of the Fittest, Course Design and the Impact of Technology*
- Professor Clive Mulholland**
- Deputy Vice Chancellor (Research and Student Experience), University of South Wales, U.K.

Platform presentations

(Session 1 – Co-Chairs: Dr Roberta Sammut, Head Department of Nursing and Mr John Xerri de Caro, Symposium Organising Committee)

- 1210** *Caregiver report measures of expressive vocabulary: implications for the identification of language delay in typically-developing Maltese children*
- Dr Daniela Gatt**
- Department of Communication Therapy, Faculty of Health Sciences, University of Malta
- 1225** *Genes responsible for the developmental control of foetal haemoglobin (HbF) uncovered by whole human genome sequencing in a unique family from Malta*
- Dr Joseph Borg**
- Department of Applied Biomedical Science, Faculty of Health Sciences, University of Malta

(Session 2 – Co-Chairs: Dr Paul Bezzina, Head Department of Radiography and Dr Victoria Sultana, Associate Editor MJHS)

- 1240** *Application of ultrasound and assisted ultrasound as a new decontamination technology of lettuce leaves contaminated with Escherichia coli*
- Mr David Millan Sango**
- Department of Food Studies and Environmental Health, Faculty of Health Sciences, University of Malta
- 1255** *From student to practitioner- a grounded theory exploration of transition to practice of newly qualified mental health nurses in Malta*
- Mr Damian Gouder**
- Department of Nursing, Faculty of Health Sciences, University of Malta
- 1310** Lunch Break and Poster Presentations

(Session 3 – Co-Chairs: Dr Anna McElhatton, Head Department of Food Studies and Environmental Health and Dr Josianne Scerri, Associate Editor MJHS)

1400 *Benefits obtained following a 12-week Pulmonary Rehabilitation programme: a one-year follow up*

Ms Anabel Sciriha

Department of Physiotherapy, Faculty of Health Sciences, University of Malta

1415 *Studying the unique contribution of spirituality to nurses' wellbeing in view of burnout*

Dr Michael Galea

Department of Nursing, Faculty of Health Sciences, University of Malta

(Session 4 – Co-Chairs: Dr Mark Sacco, Head Department of Physiotherapy and Dr Vasilis Valdramidis, Associate Editor MJHS)

1430 *Conventional risk factors for myocardial infarction in the Maltese population - results from the Maltese Acute Myocardial Infarction (MAMI) Study*

Dr Stephanie Bezzina Wettinger

Department of Applied Biomedical Science, Faculty of Health Sciences, University of Malta

1445 *A feasibility study to improve water and sugar consumption in Maltese school children*

Dr Claire Sillato Copperstone

Department of Food Studies and Environmental Health, Faculty of Health Sciences, University of Malta

(Session 5 – Co-Chairs: Mr René Mifsud, Head Department of Occupational Therapy and Mr Martin F. Ward, Department of Nursing)

1500 *An evaluation into the use of oral contrast media for abdominopelvic Computed Tomography (CT)*

Ms Erica Lauren Buttigieg

Department of Radiography, Faculty of Health Sciences, University of Malta

1515 *Is peripheral arterial disease being misdiagnosed when using Ankle Brachial Pressure Index (ABPI) measurement?*

Dr Cynthia Formosa

Department of Podiatry, Faculty of Health Sciences, University of Malta

(Session 6 – Co-Chairs: Professor Helen Grech, Head Department of Communication Therapy and Dr Stephen Lungaro-Mifsud, Associate Editor MJHS)

1530 *Referring in critical care: nurses as dual agents*

Dr Josef Trapani

Department of Nursing, Faculty of Health Sciences, University of Malta

1545 *The Maltese health system: leader or laggard in Europe?*

Dr Natasha Azzopardi Muscat

Department of Health Services Management, Faculty of Health Sciences, University of Malta

1600 *Optimisation of Computed Tomography (CT) scanning parameters for commonly performed adult examinations, incorporating a national Maltese CT diagnostic reference level survey*

Dr Francis Zarb

Department of Radiography, Faculty of Health Sciences, University of Malta

1630 **Closing of Symposium**

Address by Professor John Rizzo Naudi

Address by the Hon. Parliamentary Secretary for Health, Mr Christopher Fearné

Poster Programme

First Session: 1000 – 1030 / Second Session: 1310 – 1400

1. Demographic, lifestyle and environmental determinants of fibrinogen levels
Christine Tabone, Ritiene Attard, Alex Gatt, Philip Dingli, Karen Cassar, Stephanie Bezzina Wettinger and Rosienne Farrugia
2. Analysis of two functional polymorphisms in the LRP5 gene in relation to bone mineral density and fracture risk in Maltese post-menopausal women
Melissa Formosa and Angela Xuereb Anastasi
3. L-Dopa responsive dystonia due to sepiapterin reductase deficiency
Graziella Camilleri and Rosienne Farrugia
4. Modelling the motor neuron degeneration disorder Spinal Muscular Atrophy in the fruit fly *Drosophila melanogaster*
Rebecca Borg, Christian Sant Debono Cassia and Ruben Cauchi
5. The performance of Maltese bilingual children on a Maltese-English non-word repetition task
Nadine Calleja and Helen Grech
6. Reviewing the water resources management of the Maltese Islands: current practices and perspectives
David Spiteri, Christian Scerri and Vasilis Valdramidis
7. Developing the Magnetic Resonance (MR) Care Pathway using formative research
Joseph Castillo, Carmel J. Caruana, Paul Morgan and Catherine Westbrook
8. Midwife-led interventions to address postpartum post-traumatic stress: a systematic review
Nicole Borg Cunen, Jenny McNeill and Karen Murray
9. An evaluation of the perceived staff attitudes, level of strain, self-efficacy and observed quality of care of persons with dementia in hospital wards
Anthony Scerri and Charles Scerri
10. Living with Guillain-Barré Syndrome
Silvan Chetcuti, Victoria Sultana and Joanna Depares
11. Scoliosis: lower limb asymmetries during the gait cycle
Cassandra Haber and Mark Sacco
12. Cross-border health care services for children with chronic illness
Maria Said Pullicino and Natasha Azzopardi Muscat
13. Elderly needs and use of community services - narrowing the gap
Deborah Stoner, Dorianne Farrugia, Dorothy Gauci, Ketivan Glonti and Neville Calleja
14. Using Analytical Hierarchical Process (AHP) as a decision-making tool for length of stay in three types of surgical interventions
Sandra C. Buttigieg and Prasanta K. Dey

Malta Journal of Health Sciences

Aim and scope

The *Malta Journal of Health Sciences* is a peer-reviewed, open access publication that promotes the sharing and exchange of knowledge in Health Sciences. It provides a platform for novice and established researchers to share their findings, insights and views within an inter-professional context.

The Journal publishes original research papers, review articles, short communications, commentaries, letters to the editor and book reviews. The readership of the Journal consists of academics, practitioners and trainee health professionals across the disciplines of Applied Biomedical Science, Audiology, Communication Therapy, Community Nursing, Environmental Health, Food Science, Health Services Management, Medical Physics, Mental Health Nursing, Midwifery, Nursing, Occupational Therapy, Physiotherapy, Podiatry and Radiography. Submitted manuscripts undergo independent blind peer review, typically by two reviewers with relevant expertise. All manuscripts are reviewed as rapidly as possible and an editorial decision is generally reached within approximately two months of submission. Authors of manuscripts that require revisions will have two weeks to submit their revised manuscripts. No manuscript that has already been published or is under consideration for publication elsewhere will be considered.

The Journal originates within the University of Malta's Faculty of Health Sciences.

Call for Papers

The *Malta Journal of Health Sciences* invites submissions on the topic areas of Applied Biomedical Science, Audiology, Communication Therapy, Community Nursing, Environmental Health, Food Science, Health Services Management, Medical Physics, Mental Health Nursing, Midwifery, Nursing, Occupational Therapy, Physiotherapy, Podiatry and Radiography. Papers must be submitted by email to the Editor-in-Chief on mjhs@um.edu.mt. To be considered for publication, manuscripts should be prepared according to the guidelines shown on the Journal website at <http://www.um.edu.mt/healthsciences/mjhs/> submission. All submissions will be evaluated through the Journal's peer review process.

Abstracts
Oral Presentations

Survival of the fittest, course design and the impact of technology

Clive Mulholland

Deputy Vice Chancellor (Research and Student Experience), University of South Wales, U.K.

Abstract

Technology impacts on every part of our lives. It is disruptive, business changing and incredibly challenging for organisations and institutions that have in some cases been around for centuries. New business paradigms have appeared and challenged existing business practices. Human behaviour is also changing as a result of rapid changes in technology. Broadband, wireless, 3/4G, mobiles, tablets, etc. influence how we interact, communicate and share information and knowledge. How will this impact on HE? How will pedagogy change? How do we, or should we, keep up with student led technologies?

This presentation will explore how course design may change as a result of technology. MOOCs, sMOOCs, Open Educational Resources, flipped classrooms, challenge testing, simulations, learner analytics, all may lead to disruptive innovation in course design.

Examples from other industries and sectors will be used to illustrate how things may begin to change quite rapidly in the next few years and how the learner experience could change.

Biography

Clive Mulholland is currently Deputy Vice-Chancellor for Research and Student Experience at the University of South Wales, and has strategic responsibility for research, and the enhancement of teaching and learning. Before joining South Wales, Clive held positions at the University of Ulster, Queens University Belfast and Swansea University. He began his career in the scientific civil service before moving to the NHS and eventually to the university sector. Originally a biomedical scientist, over the last 20 years he has developed a particular expertise in how new technologies can be exploited to enhance the student experience, both in and out of the classroom. Clive is a fellow of the Royal Society of Medicine, a fellow of the Royal Society of Arts, a fellow of the Institute of Biomedical Scientists, a Chartered Scientist and a Senior fellow of the Higher Education Academy. In June 2014 he will take up the position of Principal and Vice-Chancellor of the University of the Highlands and Islands in Scotland.

Caregiver report measures of expressive vocabulary: implications for the identification of language delay in typically-developing Maltese children

Daniela Gatt¹, Helen Grech¹, Barbara Dodd²

¹ Department of Communication Therapy, Faculty of Health Sciences, University of Malta, Malta

² Division of Language and Communication Science, School of Health Sciences, City University London, U.K.

Protracted growth of expressive vocabulary may be the first indicator of a persistent impairment in language development. Research data highlight the importance of identifying vocabulary delays early. Although identification is facilitated by standardised caregiver report measures of vocabulary production, the relevant cut-off points for delay are generally only applicable to monolingual English-speaking children.

The present study was primarily motivated by the need for objective data which could contribute towards the identification of young Maltese-speaking children with potential language delays. More specifically, it sought to investigate the rate at which typically-developing children's expressive vocabulary increased between 12 and 30 months of age, as well as the range of variation that accompanied mean vocabulary growth. Exploring mean, minimum and maximum vocabulary scores represents a first step towards setting up a normative reference base specific to the Maltese language-learning context. This may aid the detection of children potentially at risk for persistent language impairment at an early stage of development.

The study involved a cross-sectional cohort of 44 typically-developing Maltese children aged 12-30 months. Participants were exposed primarily to Maltese in their homes but also received sporadic exposure to the English language because of the presence of bilingualism at a societal level. Expressive vocabularies were measured through caregiver report.

Results showed that mean scores at each age point were accompanied by considerable individual variation. Gender was found to be unrelated to mean growth in vocabulary scores. Comparison of minimum scores to clinical thresholds established for English-speaking children highlighted the assessment- and language-specific nature of identification criteria. It was concluded that established clinical thresholds may be referred to when norms for particular languages or language pairs are limited. The consideration of other predictors of persistent impairment is also relevant in supplementing expressive vocabulary measures.

Genes responsible for the developmental control of foetal haemoglobin (HbF) uncovered by whole human genome sequencing in a unique family from Malta

Joseph Borg¹, Laura Grech², Alex E. Felice²

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The genetics of the developmental regulation of globin gene expression from gamma to beta globin biosynthesis is not completely understood. Hereditary persistence of foetal haemoglobin (HPFH), which is characterised by persistent post-natal high levels of foetal haemoglobin (HbF > 2.0%), is useful to discover genes involved in the physiology of globin gene control. National haemoglobin testing uncovered a unique type of HPFH caused by a premature stop codon mutation in human KLF1 (p.K288X) gene among 10 of 29 members from a Maltese family, suggesting a dominant allele with variable penetrance. Additional work suggested that this gene is unlikely to be acting alone, and DNA samples were further analysed by whole genome sequencing.

Selected members (n = 10) from the unique Maltese family with HPFH were analysed by whole genome sequencing. Top candidate genes that emerged from the whole genome assay were studied further by quantitative Polymerase Chain Reaction (PCR), and knock down assays in cultured human erythroid progenitor cells. Ribonucleic acid (RNA) and Protein lysates were subsequently extracted from these cultured cells and analysed further. Globin mRNA was detected and quantified by radioactive S1 nuclease assay and western blots showed the protein content of human gamma globin.

From a selected list of top candidate genes, four were successfully knocked down and studied further, showing additional results that they may be implicated in developmental control of foetal haemoglobin production. It is being hypothesised that they are acting in conjunction with human KLF1 to produce a heterogenous HPFH phenotype. A relatively high expression (>2-fold difference) of gamma globin was consistent with successful knockdown of these genes, with one gene, a heme transporter, showing reproducible results in three independent culture donor cells.

The results so far indicate that a heme transporter appears to be implicated with the developmental control of haemoglobin, and a mutated transporter can perturb the fine balance between foetal and adult globin chains, thus favouring one versus the other. Future work includes an overexpression of the heme transporter *in vitro*, in a cell culture model.

Application of ultrasound and assisted ultrasound as a new decontamination technology of lettuce leaves contaminated with *Escherichia coli*

David Millan Sango, Anna McElhatton, Vasilis Valdramidis

Department of Food Studies and Environmental Health, Faculty of Health Sciences, University of Malta, Malta

Recent outbreaks related to fresh produce have shown the need for development of new efficient and effective decontamination technologies to protect consumers' safety. Ultrasound (US) has proved to be an efficient technology for inactivation of microorganisms present on food products. Additionally, researchers have reported that assisted ultrasound i.e. the combination of ultrasound with another decontamination technology, is more effective against bacteria than ultrasound alone. The objective of this study was to investigate the efficacy of different operational ultrasound configurations and to evaluate the unexplored decontamination technology of assisted ultrasound combined with the essential oil (EO) of oregano on lettuce leaves.

Equal surface areas of bacterial free Romaine lettuce leaves (192 cm²) were inoculated with *Escherichia coli* NCTC 12900 to induce bacterial attachment. Leaves were then treated with an ultrasound probe system (26 kHz, 90 μm, 200 W, 14 mm Ø). The same processing time was applied with continuous and pulsed modes of: 10s on/6s off, 5s on/5s off and 2s on/8s off. Thus, total treatment durations were 5, 8, 10 and 25 min. Additionally, several concentrations of oregano EO (i.e. 0.010%, 0.014%, 0.018%, 0.022% and 0.025% v/v) were tested when operating with continuous and 2s on/8s off pulsed mode.

Continuous ultrasound treatments led to a reduction of 2.65 ± 0.23 log cfu/cm². No significant differences were found among the tested pulsed and continuous modes. The highest levels of reduction in continuous mode and pulsed mode were achieved at 0.018% v/v (5.08 ± 0.52 log cfu/cm²) and at 0.025% v/v (5.30 ± 0.25 log cfu/cm²), respectively.

These results clearly indicate that the effectiveness of the assisted ultrasound process was dependent on the processing time rather than the different configurations (continuous or on/off) or the total treatment duration. High levels of EO combined with US have produced a synergistic effect on the inactivation of the tested bacteria.

From student to practitioner - a grounded theory exploration of transition to practice of newly qualified mental health nurses in Malta

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²Mount Carmel Hospital, Malta

³Department of Physiotherapy, Faculty of Health Sciences, University of Malta, Malta

The main aim of this study consisted in exploring the process of transition to practice in mental health nursing in relation to the participants' views and experiences. Moreover, the study also sought to explore coping and adaptation strategies adopted during the process of transition. A grounded theory approach was used in order to explore meanings, patterns, social interactions and structures pertaining to the process of transition to practice. All seven participants were newly qualified mental health nurses who had completed a three-year direct entry degree programme. They had all been working in acute inpatient settings for about six months prior to data collection within the only state-owned psychiatric hospital. The methods in this study involved concurrent data collection (mainly interviews) and analysis through the use of constant comparative method, coding, theoretical sampling and memo writing. Various categories/concepts emerged regarding the process of transition. These included time, recruitment, student role, new role, profession, mental health nursing practice, use of self, fitting-in, expectations, knowledge, clinical structure, social life and settling down. Amongst these, time emerged as the core concept underlying transition and a tentative substantive theory was put forward.

The theory which emerged from the findings outlined a complex interplay between different elements of the process of transition. This process unfolded as participants were engaged in coping with the changes occurring within themselves, and in relation to their new realities and circumstances. This research study sought to provide an in-depth understanding of the experience of transition of newly-qualified mental health nurses in Malta. Despite the limitations and strengths, several implications were raised within the study findings which mainly pertained to how the transition to practice experience in mental health nursing could be enhanced.

Benefits obtained following a 12-week Pulmonary Rehabilitation programme: a one-year follow up

Anabel Sciriha^{1,2}, David Bilocca³, Claudia Fsadni³, Peter Fsadni³, Eleonor Gerada³, Caroline Gouder³, Liberato Camilleri⁴, Stephen Lungaro-Mifsud¹, Stephen Montefort³

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Pulmonary rehabilitation (PR) is a recommended standard of care for patients suffering from Chronic Obstructive Pulmonary Disease (COPD), based on a growing body of evidence. 60 subjects were recruited into a 12-week PR programme. The subjects were then followed up again at 28 and 52 weeks after completion of the programme. After 12 weeks of rehabilitation, significant improvements in various outcome measures were noted: 6-minute walk test ($F_{5, 274} = 7.978$; SD 127, 95% CI 446, 519, $p < 0.001$), domains in St. George's Quality of Life Questionnaire [Symptom domain = ($F_{5, 274} = 8.310$, SD 16.7, 95% CI 18.22, 27.79, $p < 0.001$), Activity domain = ($F_{5, 274} = 9, 860$, SD 21.54, 95% CI 32.50, 44.87, $p < 0.001$), Impact domain ($F_{5, 274} = 15, 303$, SD 11.31, 95% CI 10.21, 16.70, $p < 0.001$) and Total score ($F_{5, 274} = 14, 792$; SD 13.37, 95% CI 18.48, 26.17, $p < 0.001$)], Hospital Anxiety and Depression score (anxiety $F_{5, 273} = 5.666$; SD 2.937, 95% CI 1.31, 3.01; $p < 0.001$), depression ($F_{5, 273} = 5.666$; SD 1.817, 95% CI 0.59, 1.70; $p < 0.001$), Borg scale at rest ($F_{5, 274} = 5.081$; SD 1.339, 95% CI 0.00, 0.67; $p < 0.044$) and after exercise ($F_{5, 274} = 6.152$; SD 1.566, 95% CI 1.63, 2.53; $p < 0.040$). Significant improvements were also noted in the BODE index (Body mass index, obstruction, dyspnoea and exercise score) ($F_{5, 274} = 6.487$; SD 1.852, 95% CI 2.63, 3.70; $p < 0.001$) and COPD Assessment Test ($F_{5, 274} = 12, 253$; SD 5.768, 95% CI 3.67, 6.98; $p < 0.001$). At weeks 28 and 52 there were no significant improvements or deteriorations in the patients' conditions. Patients with mild to moderate severity reported improvements after 4 weeks of rehabilitation and continued to show improvements after 8 and 12 weeks in their 6-minute walk test. Those with severe COPD did not show significant changes at 12 weeks except for health-related quality of life measures.

Studying the unique contribution of spirituality to nurses' wellbeing in view of burnout

Michael Galea

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Burnout is thought to arise from prolonged disparity between what one gives and receives especially at work. In this population study, we targeted all professional Maltese nurses working at Gozo General Hospital. A cross-sectional design was employed. A self-report questionnaire was adopted. This measured burnout (Maslach Burnout Inventory), personality (Big Five Inventory), subjective wellbeing (Subjective Wellbeing Scale), spirituality (Faith Maturity Scale). The questionnaire included a qualitative section and also requested demographic information. Response rate was 72%. High levels of burnout were found as hypothesised. Burnout negatively correlated with subjective wellbeing and with personality, in particular with neuroticism. Thus, the more burnout is prevalent, the less healthy one is. Spirituality was found to predict burnout by 4% even after controlling for key variables such as wellbeing and personality. The implications of these results are discussed.

Conventional risk factors for myocardial infarction in the Maltese population – results from the Maltese Acute Myocardial Infarction (MAMI) study

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³ Health Technology and Services Research, MIRA – Institute for Biomedical Technology and Technical Medicine, University of Twente, The Netherlands

This study aimed to determine the influence of some conventional risk factors for Myocardial Infarction (MI) in the Maltese population. Some 429 cases with a first MI, 434 controls and some 190 relatives of cases have been recruited in the Maltese Acute Myocardial Infarction (MAMI) study. Data has been collected through an interviewer-led questionnaire, physical measurements and biochemistry and haematology testing. Odds ratios (OR) were calculated and adjusted (AdjOR) for age, gender, smoking/drinking alcohol, hypertension, diabetes, hypercholesterolaemia and body mass index.

Smoking, diabetes, hypertension, hypercholesterolaemia and a family history of MI are amongst the risk factors associated with an increased risk of MI in the Maltese. Both active and passive smoking are associated with a 3-fold increased risk for MI. Whereas regular drinking (having at least one drink per week for one year) is associated with a decreased risk for MI [AdjOR 0.6 (95% CI 0.4-0.8)], the risk associated with daily binge drinking (six or more drinks in the same occasion) is very high reaching an OR of 5.8 (95% CI 1.2-27.1). The risk associated with diabetes varies depending on the level of control. Uncontrolled diabetes (defined as HbA1C levels above 6.5%) is associated with a 3-fold increased risk of MI [AdjOR 3.0 (95% CI 1.9-4.7)], whereas controlled diabetics showed no increased risk of MI [AdjOR 0.9 (95% CI 0.4-2.1)].

The conventional risk factors in the Maltese population are similar to those of other Western countries. Attention needs to be given to improving glucose control in diabetes. Passive smoking is as strong a risk factor as active smoking and the risk associated with alcohol consumption varies depending on the pattern and frequency of drinking. Regular binge drinking is a particularly strong risk factor for MI.

A feasibility study to improve water and sugar consumption in Maltese school children

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The prevalence of childhood obesity is increasing in most countries, including Malta, and is a major public health concern. School-aged children are an important target group since this phase is a critical time for reinforcing correct eating habits to prevent obesity. The purpose of this investigation was to conduct a feasibility study to reduce intake of sugar and sugary drinks and to increase water consumption in Maltese school children aged 9-11 years.

The intervention was carried out during the scholastic year 2011-2012 in three state schools in Malta. The main dietary outcomes measured were changes in total sugar intake (g/day) and changes in drinking water consumption, measured as glasses/day of water (1 glass = 250ml). A novel online 24-hour recall dietary assessment tool was used, REALITYMALTA™, developed at the Rowett Institute of Nutrition and Health, U.K. which was modified and validated for use in Maltese school children. The dietary results were analysed and compared for food counts and nutrients using Wilcoxon signed-rank tests and paired sample *t*-tests respectively.

Seventy-six consent forms were sent out and 55 parents agreed to take part. Fifty-four children completed the pre-intervention, of whom 48 (30 males, 18 females) completed both pre- and post-intervention assessments. No significant differences were found for most counts, except for fruit consumption increase ($p = 0.03$). A statistically significant reduction was reported for energy intake ($p = 0.03$), and small but non-significant reductions were reported for fats (g/day) ($p = 0.06$), sugars (g/day) and non-milk extrinsic sugars (NMES) (g/day) ($p < 0.50$ for both). Water consumption rates did not change ($p=0.49$).

Although the sample was small, changes in sugars, fat and energy intake in the intended direction were detected. Further research is needed to identify ways of increasing these changes, possibly by including the home environment and by increasing the duration of the intervention.

An evaluation into the use of oral contrast media for abdominopelvic Computed Tomography (CT)

Erica Lauren Buttigieg^{1,2}, Karen Borg Grima², Francis Zarb²

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²Medical Imaging Department, Mater Dei Hospital, Malta

The purpose of this study was to evaluate the impact of different oral contrast media (OCM) for abdominopelvic Computed Tomography (CT) examinations on diagnostic efficacy in a CT unit of the local general hospital. The objectives were to establish anatomical image quality criteria, including bowel evaluation, for abdominopelvic CT; use these criteria to evaluate and compare image quality using positive OCM, neutral OCM, and no OCM; and evaluate possible benefits for the medical imaging department.

Forty-six adult patients attending a follow-up abdominopelvic CT for general oncological indications and who had a previous abdominopelvic CT with positive OCM were recruited to this experimental study. Previous patient CT images with positive OCM (n = 46) comprised the control group. The same patients were placed into either the water (n = 25) or no OCM (n = 21) groups prospectively in an alternative fashion when attending their follow-up CT examination. Three radiologists performed absolute visual grading analysis (VGA) to assess image quality by grading the fulfilment of 24 anatomical image quality criteria. Costs were computed by calculating the monetary expenditure related to OCM administration.

Visual grading characteristics (VGC) analysis of the data showed comparable image quality with regard to reproduction of abdominal structures, bowel discrimination, presence of artefacts, and visualisation of the amount of intra-abdominal fat for the three OCM protocols in this study. The use of water or no OCM would provide an annual cost saving of approximately €8000 without compromising diagnostic efficacy.

It was concluded that all three OCM protocols provided similar image quality for follow-up abdominopelvic CT for general oncological indications. This shows potential for discontinuation of the routine use of positive OCM for this patient category in the CT unit of the local general hospital.

Is peripheral arterial disease being misdiagnosed when using Ankle Brachial Pressure Index (ABPI) measurement?

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This study aimed to compare the findings of the arterial waveform interpretation in conjunction with the Ankle Brachial Pressure Index (ABPI) readings in order to determine whether a correlation between the two exists. A prospective study design was conducted to investigate the ABPI in 49 patients living with Type 2 diabetes mellitus. ABPI assessment was assessed using a portable handheld Doppler and ankle pressures of <0.9 were taken as suggestive of peripheral arterial disease (PAD). Arterial spectral waveforms in each foot were also recorded and compared to the ABPI readings.

Based on ABPI protocols, 36.7% of the sample population (n=18) was classified with a 'normal' vascular status (0.9-1.29). However, the waveforms in right dorsalis pedis and/or posterior tibial arteries were suggestive of PAD.

Both ABPIs and Doppler waveforms should be used in people with diabetes. When these do not concur, further evaluation should be performed. This strategy would ensure an accurate assessment of PAD and would significantly reduce the proportion of patients falsely identified as having no peripheral arterial disease. Subsequently, it would allow initiation of appropriate secondary risk factor control measures. Current recommendations about physiological testing of peripheral perfusion in diabetes should be re-evaluated and consideration should be given to include spectral waveforms as part of the assessment.

Referring in critical care: nurses as dual agents

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Research indicates that one of the most frequent nursing decisions is that of seeking help from medical, nursing or other health care practitioners; yet, there is very limited research around the factors related to, and the actual process of, such referring. The present study sought to address this research gap by exploring the factors associated with critical care nurses' decisions to seek help from doctors, and to explain the process of referral in the context of an intensive care unit by means of a substantive theory derived from the data.

The study took place in a general intensive care unit in a local state hospital. Data collection involved: 20 hours of preliminary non-participant observation; 50 hours of participant observation and informal interviewing; 15 hours of formal semi-structured interviewing with 10 nurses selected by means of purposive and theoretical sampling; and two 2-hour focus group sessions. Concurrent data collection and analysis was guided by the dimensional analysis approach to grounded theory involving a series of inductive-deductive cycles with increasing levels of abstraction.

The findings suggest that nurses' decisions to seek help from doctors involve nurses weighing up several occasionally conflicting motivators. A central consideration is that of balancing their moral obligation to safeguard critically ill patients' interests with their duty to respect medical practitioners' authority. Subsequently, nurses find themselves in a position of dual agency as they need to concurrently act as an agent to two different principals, namely the medical practitioner and the patient, a situation which is potentially morally distressing.

The emergent substantive theory underscores the significance of the nurse's role in acting on behalf of the patient in a scenario of significant patient vulnerability; the factors that enhance, mediate and potentially suppress this advocacy role; and the interrelatedness of nurses' relationship with doctors and their effectiveness in safeguarding critically ill patients' interests.

The Maltese health system: leader or laggard in Europe?

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The purpose of this study was to compare key health system trends in Malta and the European Union (EU) in order to make appropriate policy recommendations. An assessment of the Maltese health care system was carried out using the standard template developed by the European Observatory on Health Systems and Policies for HiT (Health Systems in Transition) country reports. Findings showed that Malta's population is rapidly ageing: while the old age dependency ratio (23.7%) compared favourably with the EU (25.9%) in 2011, by 2020 Malta is projected to surpass the EU average. Life expectancy has increased over the past 20 years, reaching 78.4 years for men (77.4 years EU) and 82.6 years for women (83.2 years EU). Standardised mortality rates for circulatory diseases have decreased but remain relatively high. Mortality rates for cancers show a downward trend. However, survival rates remain below average. In 2011, total health expenditure was 8.7% of GDP (EU 9.6%); public spending comprised 64% of total spending (76% EU). Growth in private spending outpaced public expenditure growth in 2010 and 2011. Nonetheless, self-reported unmet need due to financial constraints remains low at 0.8% (EU 2.3%). The supply of human resources is generally below the EU average with exceptions for paediatricians, pharmacists and midwives. The number of beds in acute hospitals is below the EU average. Average length of stay in acute hospitals has been rising due to bottlenecks in the care pathway and deficiencies in long-term care.

Cross-country comparisons highlight the degree to which an ageing population, coupled with supply constraints stemming from limited financial, infrastructural and human resources, inhibits health system performance. The findings from this comparative analysis were used to guide the priorities for the National Health Systems Strategy.

Optimisation of Computed Tomography (CT) scanning parameters for commonly performed adult examinations, incorporating a national Maltese CT diagnostic reference level survey

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This study investigated the current practice of Computed Tomography (CT) in Malta and identified radiation dose levels for CT protocols upon which radiation dose and image quality optimisation was applied. Optimisation was achieved in three stages. In Stage 1, a national radiation dose survey facilitated the collection of data, including: frequency of CT requests; CT scan parameters and radiation dose data for the establishment of diagnostic reference levels (DRLs). Stage 2 involved optimisation experimentation in two parts. Part 1: manipulation of scan parameters and objective measurement of their effect on radiation dose and image quality using a Catphan®600 CT QA phantom. Part 2: further optimisation using a porcine model and the inclusion of visual grading analysis (VGA) of images. The clinical implementation of finalised optimised protocols formed Stage 3. CT data sets originating from current and optimised protocols were evaluated and compared using absolute VGA. Additionally, image quality analysis incorporated the application of visual grading characteristic (VGC) and ordinal regression analysis. The optimisation of CT practice for head, abdomen and chest examinations involved 15 protocols. Following Catphan®600 and porcine model experimentation, five currently applied protocols were retained. The Catphan®600 only recorded optimal findings for two of the 10 optimised protocols. The remaining eight protocols were further optimised following porcine experimentation, indicating that optimisation based on phantoms renders limited results. Overall radiation dose savings of 15% head and 40% chest CT were achieved, while maintaining diagnostic efficacy. Maltese CT DRLs were identified and the optimisation of CT protocols resulted in the revision of clinical practice. Optimisation involving the Catphan®600 and porcine model using appropriate statistical analysis of image quality and involvement of radiologists throughout the optimisation process led to significant radiation dose savings, facilitating the acceptance and implementation of the optimised protocols in the clinical setting.

Abstracts
Poster Presentations

Demographic, lifestyle and environmental determinants of fibrinogen levels

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Fibrinogen is an acute phase protein which has repeatedly shown an independent association with cardiovascular disease. This study aimed to investigate the effects of age, gender, smoking, alcohol consumption, body mass index (BMI), diabetes, hypercholesterolaemia and menopause on fibrinogen levels in the Maltese adult population.

Data on 388 controls (20-75 years) was obtained through an interviewer-led questionnaire as part of the Maltese Acute Myocardial Infarction (MAMI) Study. Fibrinogen levels were determined in citrated plasma using the Clauss Assay.

Results showed that gender is one of the major determinants of fibrinogen levels. Median plasma fibrinogen levels were found to be 3.28g/L in females and 2.88g/L in males ($p<0.001$). Fibrinogen levels also change with age in both genders. Analysis by 10-year age groups showed a progressive increase with the highest levels detectable in the oldest sub-group. In females, levels are significantly higher in post-menopausal women compared to pre-menopausal women (3.40g/L vs. 2.71g/L; $p<0.001$). In males, smoking also influences fibrinogen levels, with current smokers having the highest levels (3.09g/L). Levels in ex-smokers are somewhat decreased (2.91g/L) but still higher than levels in individuals who have never smoked (2.76g/L). Alcohol consumption reduces fibrinogen levels, but this was mostly evident in individuals who smoke. A trend of increasing fibrinogen levels with increasing BMI was present in both genders but much more pronounced in females. Diabetes also increases levels of fibrinogen, with self-reported diabetics of both genders having higher fibrinogen levels when compared to non-diabetics. Conversely fibrinogen levels are the same in hypercholesterolaemic and normocholesterolaemic males. Levels in females are higher in hypercholesterolaemics but this sub-group was older than the normocholesterolaemic sub-group and thus the effect of age cannot be excluded.

The study concluded that fibrinogen levels are clearly influenced by gender, age, smoking and diabetic status. In females, menopause increases fibrinogen levels and the effect of BMI is more pronounced than in males.

Analysis of two functional polymorphisms in the LRP5 gene in relation to bone mineral density and fracture risk in Maltese post-menopausal women

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The Low-density lipoprotein receptor-related protein 5 (LRP5) is involved in osteoblast differentiation and bone formation, making it an important determinant of bone mass and strength. The influence of two functional missense single nucleotide polymorphisms (SNPs) A1330V (rs3736228; C>t) and V667M (rs4988321; G>a) were analysed in relation to bone mineral density (BMD) and different low trauma fractures in Maltese post-menopausal women.

1040 Maltese post-menopausal women were recruited and BMD measurements were performed by dual-energy X-ray absorptiometry. Women who suffered low-trauma fractures were classified as cases whereas subjects without a fracture history were included as controls. Informed consent was obtained from all participants. Genotyping of the A1330V polymorphism was performed by polymerase chain reaction (PCR) followed by restriction enzyme digest, whereas real-time PCR was performed for the V667M SNP.

Using logistic regression analysis adjusted for age, the A1330V SNP was associated with reduced BMD at the lumbar spine [TT: OR=4.4 (95% Confidence Interval, CI 1.5-13.0), $p=0.001$; CT: OR=1.7 (1.2-2.5), $p=0.005$] and to a lesser extent reduced femoral neck BMD [TT: OR=3.6 (1.0-12.8), $p=0.05$; CT: OR=1.7 (1.1-2.5), $p=0.01$]. Fracture cases carrying one or both copies of the minor allele T had an increased fracture risk compared to women with the CC genotype ($p=0.05$). The TT genotype was the most common among subjects with non-vertebral fractures (including wrist, humerus and hip fractures); nonetheless the difference was not significant ($p>0.05$). The haplotype with both risk alleles (AT) was associated with a reduced BMD ($p=0.05$) as opposed to the haplotype reference (GC) which was strongly linked to a high BMD ($p=0.002$).

The results indicate that the A1330V and V667M polymorphisms within the LRP5 gene are associated with reduced BMD and/or increased fracture susceptibility in Maltese post-menopausal women.

L-Dopa responsive dystonia due to sepiapterin reductase deficiency

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Sepiapterin reductase deficiency (SRD) is a very rare form of dopa-responsive dystonia with less than 100 patients reported worldwide. Locally, seven patients from four unrelated families have been diagnosed with this deficiency. SRD is an early onset disorder with symptoms appearing at around seven months from birth. Core symptoms include motor and language delays, mental retardation and dystonia. Treatment with L-Dopa supplementation before symptoms appear is expected to give a better outcome, with minimal motor and cognitive impairment. SRD is caused by mutations in the *SPR* gene which is responsible for the synthesis of the enzyme sepiapterin reductase. Sepiapterin reductase is a key enzyme in the synthesis of tetrahydrobiopterin (BH_4), the essential cofactor for the conversion of amino acids into the precursors of Dopamine and Serotonin. Sequencing of the entire *SPR* gene identified the same novel mutation in all seven Maltese patients, IVS2 -2A>G (c.596-2A>G). This splice site mutation most likely abolishes the production of a functional enzyme. Restriction enzyme digest used to assess the frequency of *SPR* IVS2 -2A>G mutation in a cohort of 365 neonates born in 2011 identified five carriers for this mutation. The carrier frequency was calculated to be 1.38%. With this frequency, the probability of a homozygote affected individual being born is roughly one in every six years. Knowing the mutation responsible for this disorder opens up the possibility of carrier screening for members of the extended family as well as testing of patients presenting with dystonia and suspected of having this disorder.

Modelling the motor neuron degeneration disorder Spinal Muscular Atrophy in the fruit fly *Drosophila melanogaster*

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Spinal Muscular Atrophy (SMA) is a common genetic killer of infants. It is characterised by progressive loss of motor activity due to death of motor neurons and degeneration of muscles. The cause of this devastating neuromuscular disorder has been pinned on very low levels of the survival motor neuron (SMN) protein. SMN partners with the Gemin proteins to form a highly-ordered complex. The best-characterised function of the SMN-Gemins complex involves assembly of small nuclear ribonucleoproteins (snRNPs), which are the basic units that form the spliceosome or the chief editor of messenger RNA (mRNA) molecules that instruct cells how to fabricate proteins. Flies have a minimalistic SMN-Gemin complex that is amenable to genetic manipulation. We describe our current work on the phenotypes resulting from disruption of the SMN-Gemins complex in the fruit fly (*Drosophila melanogaster*) model organism. Our findings inform on the molecular pathway that might be negatively impacted in SMA.

The performance of Maltese bilingual children on a Maltese-English non-word repetition task

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Non-word repetition tasks (NWRs) are used clinically as markers for language impairment. There has been extensive research on the use of NWRs in the assessment of children with language impairment and literacy difficulties. The administration of a NWR requires the child to repeat nonsense words that are presented auditorily. Since NWRs tap particularly into phonological memory, they need to be language-specific. The unique bilingual context in Malta presents a further challenge. Appropriate assessments are still being developed and standardised on our population for use by clinicians. This paper presents findings related to the construction of a NWR for bilingual Maltese-English children using two separate lists – one Maltese-based and the other English-based.

The sample population included 90 Maltese children, 41 males and 49 females, aged between 5;00 and 5;11 years. 55 of the children used Maltese as their primary language (L1) while 35 children used English. All the children were required to complete both Maltese and English-based NWRs specifically developed for the study. Each NWR included 56 non-words. The non-words varied in syllable length and presence/absence of consonant clusters/sequences. Lists were audio-recorded by a native bilingual narrator and presented through speakers.

Overall, the children performed significantly better in the Maltese-based non-word tasks ($p < .001$). No statistical difference was found between the performance of the L1-Maltese and L1-English children on both lists. As the number of syllables increased, more errors were produced in both non-word lists ($p < .001$). Analysis of percentage errors produced in consonant sequences, clusters and single consonants resulted in significantly more errors produced in consonant sequences and clusters when presented with the Maltese non-words ($p < .001$). This pattern was also observed in the English non-words, but not to the extent of showing a statistically significant difference.

Reviewing the water resources management of the Maltese Islands: current practices and perspectives

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A study published in 2006 looked at European wastewater management. The study reported that almost 70% of the population are facing water stress due to water scarcity and quality deterioration, with Malta being in the top three with up to 60% water stress index. This result highlighted the need of national measures to ensure a sustainable water management process that should be implemented in order to allow wastewater reclamation and reuse. In the Maltese Islands, water is a very scarce substance due to the fact that no surface water source exists. If wastewater is treated correctly, its reuse could be one of the major solutions to water problems. Scientists have long been devising efficient methods of disinfection for the reuse of sewage effluents.

This work reviews the current water resources management in the Maltese Islands and proposes alternative methods to improve it. Once disinfected, sewage effluent is discharged back to the sea and may eventually be pumped back up by a reverse osmosis plant, in order to produce fresh water. Alternatively, the sewage effluent could be used for irrigation. The water will then pass through the process of percolation, thus settling in the aquifer, allowing for the indirect recharge of the ground water. Another option, which is not yet in use in Malta but has been used in several countries, is the recharge of the ground water, reducing the possibility of seawater intrusion. Finally, the tertiary method of disinfection, currently utilised in the Maltese Islands, is chlorination that produces undesired halogenated products in high amounts.

The presented review findings urge for revising the current water resources management, aiming at more efficient use of water from the sea and the aquifer. Alternatives to tertiary disinfection methods are also needed to ensure less environmental impact on the aquifer.

Developing the Magnetic Resonance (MR) Care Pathway using formative research

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A clinical pathway defines the optimal care process, sequencing and timing of interventions by health care professionals for a clinical procedure. Clinical pathways are developed through collaborative efforts of health care professionals with the aim of improving the quality (effectiveness, safety) of patient care, while maximising efficiency. The purpose of this study was to develop further a model of Magnetic Resonance (MR) Care Pathway appropriate for Malta. A nominal group technique session was conducted amongst a panel of 13 Magnetic Resonance Imaging (MRI) stakeholder experts to gather qualitative data about the MR Care Pathway. The outputs and associated quality criteria required at each stage of the pathway were discussed. Initial findings indicate that participants attached the highest importance (>70) by means of ranking to setting a safety checklist at referrer stage (rank = 80), MR education to referrer (rank = 78), benchmarking (rank = 77) and defining quality (rank = 76). The experts were also of the view that the current model should include the provision of adequate patient information prior to MRI and the establishment of referral guidelines and transparent prioritisation guidelines. A model of a MR Care Pathway has been successfully refined using a multi-stakeholder approach. This is the first medical imaging care pathway developed in Malta using a formal research process.

Midwife-led interventions to address postpartum post-traumatic stress: a systematic review

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The aim of this study was to systematically identify interventions that midwives could introduce to address post-traumatic stress (PTSD) in women following childbirth. A search strategy was developed and relevant papers were identified from databases including Cinahl, Cochrane Library, EMBASE, Maternity and Infant Care, MEDLINE, PsycINFO, and Web of Science. Key search terms used were *post-traumatic stress*, *postpartum*, *intervention*, *controlled trial* and *review*. Papers eligible for inclusion were primary studies and reviews of research published from 2002 to 2012, focusing on interventions which could be implemented by midwives for the prevention and/or management of PTSD. For primary studies, randomised controlled trials, controlled clinical trials and cohort studies with a control group were eligible. Eligible reviews were those with a specified search strategy and inclusion/exclusion criteria. Methodological quality was assessed using recognised frameworks.

Six primary studies and eight reviews were eligible for inclusion. The majority of these included studies or reviews focused on debriefing and/or counselling interventions. However, the results were not consistent due to significant variation in methodological quality and use of dissimilar interventions. Two of the reviews considered the general management of postpartum PTSD and one broadly covered anxiety during pregnancy and the postpartum, incorporating a section on PTSD. The majority of women reported that the opportunity to discuss their childbirth experience was subjectively beneficial.

From this systematic review, no evidence-based midwifery interventions were identified that can be recommended for introduction into practice to address PTSD. It is recommended that future research in this area should incorporate standardised interventions with similar outcome measures to facilitate synthesis of results. Further research on interventions used in non-maternity populations is needed in order to confirm their usefulness in addressing postpartum PTSD.

An evaluation of the perceived staff attitudes, level of strain, self-efficacy and observed quality of care of persons with dementia in hospital wards

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The aim of this study was to evaluate perceived staff attitudes, level of strain, self-efficacy and observed quality of care provided to patients admitted in two rehabilitation wards. A total of 46 staff members out of 68 (68% response rate) completed the questionnaire that was distributed to all members of staff working in two wards. Participants included nursing officers, nurses, nursing aides, care workers, house doctors, physiotherapists, physiotherapy aides, occupational therapists, occupational therapy aides, clinical pharmacists, social workers, speech language pathologists and ward clerks. Moreover, patient care delivery was observed for a total of six hours with 10 patients from these respective wards using an observational tool known as Dementia Care Mapping. The study found that nurses, nursing aides and care workers scored significantly higher in their level of strain when compared to other health care professionals whilst the higher the perceived level of self-efficacy, the lower the level of strain towards these patients. Dementia Care Mapping showed that in both wards, patients spent most of their time either passively observing (29%) or sleeping (14%). Moreover, there were more interactions between hospital staff and patients with dementia (34 'enhancing' vs 25 'detracting') that could be considered as 'detracting' (i.e. 'putting down' the patient). The study showed the need to further develop dementia care in our local hospitals in order to reduce the level of strain and increase self-efficacy especially of staff working in direct contact with these patients and to enhance the quality of care of in-hospital patients with this condition.

Living with Guillain-Barré Syndrome

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The overall aim of this study was to explore the experiences of individuals living with Guillain Barré Syndrome (GBS) in the community. Various studies have followed the progression of GBS in the acute phase and highlighted the possibility of its long-term symptoms. This study has been carried out in an attempt to gain an insight of what living with GBS in a Maltese community setting actually means to these individuals.

The study adopted a Heideggerian hermeneutic phenomenological approach. Max Van Manen's six research activities were used as a framework for this study. Four participants, who were all women, took part in the study. All women had been treated in the Intensive Therapy Unit (ITU) in the acute stage of their illness. Participants were interviewed twice in their home setting. Transcripts of these interviews were analysed using Van Manen's (1990) process.

The process of data analysis led to the identification of three themes which are described under the headings *Lost at sea*, *Propelled into change* and *The aftermath*. Participants spoke about the long-term symptoms related to GBS which left them feeling worn out most of the time. Subsequently, they were induced to delegate strenuous everyday roles to others, typically to close family members who were usually the ones to assist them in their daily living activities. Participants highlighted how they felt indebted towards their relatives and at times 'suffocated' by them due to being over-protected. All participants were very grateful for the professional care they received as in-patients. However, within a community setting, participants felt that health care professionals do not really understand their needs. Furthermore, follow-up appointments at outpatient clinics were described as a hurdle to follow.

Participants described GBS as a "shot out of the blue" that totally changed their lives. Nonetheless, GBS served as a turning point as they established a new purpose in life. Participants never gave up hope and always looked forward to a better future. However, in trying to re-integrate themselves in society, they were faced with various environmental and 'human' barriers that isolated them.

Scoliosis: lower limb asymmetries during the gait cycle

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Trunk asymmetries such as scoliosis cause a mechanical dysfunction which is also expressed in the gait pattern. Ample research is available on back asymmetries in scoliotic subjects, but literature on lower limb asymmetries is limited. The need for further research has been voiced by several authors. The objective of this case-control study was to evaluate lower limb asymmetries in the selected gait variables.

The research population consisted of a random study sample of 31 scoliotic subjects and an equal comparative control sample of subjects with no spinal deformity. Subjects underwent objective gait analysis with the Vicon motion capture system whilst walking at a comfortable speed along the gait laboratory walkway. The Vicon software was used to analyse lower limb asymmetries in temporal parameters (speed of gait, cadence, swing-to-stance ratio), ground reaction force (GRF, vertical component only) and electromyography (peak EMG values and their time of onset, as a percentage of the gait cycle) of two lower limb muscles (Gastrocnemius and Vastus Medialis). Statistical analysis of the selected parameters was performed via the Student's *t*-test. In agreement with the literature, the speed of gait was found to be significantly slower ($p = 0.03$) in scoliotic subjects when compared to the norm. Intra- and inter-group variation was not found to be significant for other temporal parameters, peak vertical GRF values and peak EMG values of the selected muscles. However, there was statistical significance in the time of onset of EMG peaks for the Lateral Gastrocnemius with regard to inter-group lower limb asymmetry.

Scoliosis is a tri-planar deformity which has an impact on the gait pattern. This research study concludes that a slower speed of gait and variations in the timing of muscle activation are present in scoliotic subjects. Further research is being recommended to adequately understand the pathological changes associated with scoliotic gait.

Cross-border health care services for children with chronic illness

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The purpose of this study was to evaluate the Maltese health care system's effectiveness in meeting the needs and demands of children with chronic illness who utilise health services outside Malta. A case study approach was used in order to constructively recognise the multiple meanings of rich individual patient experiences and opinions of consultants who refer patients for treatment abroad. Semi-structured interviews were carried out: 15 with parents/guardians of children and 10 with consultants, most of whom were Consultant Paediatricians. Interviews were transcribed and content analysis was used to analyse data. Data triangulation, utilising data gathered from interviews, reflective diary and literature review, was carried out to ensure credibility of data presented.

Findings revealed that patients seek as much information as they can as a way of dealing with the problem and to ensure that their child receives the best treatment required. Information about travel arrangements and means to access social support was reported as lacking. Professional expertise in centres of reference, efforts to ensure continuity-of-care and parents' involvement in decisions pertaining to their child's health care management emerged as positive factors, where needs are met. The main areas of unmet needs included lack of psychological and social support and also a medical attaché overseas. The United Kingdom is the preferred country of referral due to long-established referral pathways, readily available flights and limited language barriers. The service currently being provided is meeting most patients' needs, especially with regard to medical care provision. The emphasis on provision of further support regarding non-medical aspects of care is an important observation with implications for the new arrangements being made under the European Union cross-border directive, which has been recently transposed into Maltese legislation. This study is innovative since to date no studies exploring cross border health care referral pathways in children with chronic illness were identified in the literature.

Elderly needs and use of community services - narrowing the gap

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The aim of this study was to portray the gap between the needs of Maltese elderly individuals and the use of community services. A cross-sectional survey incorporated telephone interviews with Maltese community elderly individuals aged 75+. The sample was drawn from a population register maintained by the National Statistics Office (NSO). 7824 of the sample were eligible to participate. In total, 6007 responded, resulting in a response rate of 76.8%.

Around 25% of the respondents reported finding difficulty in meal preparation, whilst 2% of the respondents reported using the Meals on Wheels service. Around 46% of the respondents reported difficulty in one or more of the following domestic tasks - light household work and/or grocery shopping and/or laundry. In contrast, 14.4% of the respondents reported using the Homehelp and/or Handyman service, with females more likely than males to make use of these services. Respondents aged 85+ were more likely than those aged 75-84 to use the services.

The results portray a gap between need and service provision, not so much because of unavailability of services but because of a number of needy individuals being unaware of them or unable to access them. These results can enable policy makers to understand the needs of the Maltese elderly population and to provide health and social care where it is needed, thus being more efficient with our resources. Further investment in primary and community care will enable those who can still live within the community to continue doing so and delay their need for institutional care.

This is the first survey in Malta focusing entirely on quantifying the needs of the elderly. Such research enables policy makers and health service managers to prioritise and plan the type and extent of services required by our elderly.

Using Analytical Hierarchical Process (AHP) as a decision-making tool for length of stay in three types of surgical interventions

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Analytic Hierarchy Process (AHP) is a decision-making tool, which in this study was used to identify the best length of stay (LOS) in three surgical interventions, namely total abdominal hysterectomies (TAH), laparoscopic cholecystectomies (LAPc), and total knee replacements (TKR) in a tertiary care hospital in Malta.

We devised a model using AHP as a multiple criteria and sub-criteria decision-making technique. The steps taken by a multi-health professional focus group were: (1) identification of critical success factors and sub-factors, their ratings and constructing the hierarchical model; (2) pairwise comparison of factors to derive their importance and assign weights; (3) derivation of weights of ratings for the various individual policies (stringent, moderate and lenient policies of LOS) in the three interventions; and (4) gap analysis. Data for the sub-criteria were collected through document analysis of 360 randomly selected patients' records drawn from the population list on the hospital's Patient Administrative System[®]. The months under study were January 2011 until December 2011.

AHP can be applied flexibly across hospital-based services for objective decision-making purposes as a solid basis to inform policy. The criteria identified were medical, financial, social and risk. Based on the results of the highest-rated policies in the three interventions: the proposed LOS for TAH is 4 days (documented average 7 days); the proposed LOS for TKR is 3-4 days (documented average 6.3 days); the proposed LOS for LAPc is 2-3 days (documented average 4 days). The proposed three LOS are in line with benchmarks identified in published literature. AHP enables top management to formulate policies related to LOS.

Dean's Awards

24th April 2014

Awardees

Briffa Mark - B.Sc. (Hons) Applied Biomedical Science

Camilleri Sabrina - B.Sc. (Hons) Nursing

Carabott John - B.Sc. (Hons) Applied Biomedical Science

Fiorini Christina - B.Sc. (Hons) Communication Therapy

Galdes Martina - B.Sc. (Hons) Communication Therapy

Mangion Roberta - B.Sc. (Hons) Occupational Therapy

Rapa Mario - B.Sc. (Hons) Radiography

Sciberras Stefan - B.Sc. (Hons) Communication Therapy

Zahra Chantelle - B.Sc. (Hons) Occupational Therapy

Zarb Bernice - B.Sc. (Hons) Nursing