

NEW AND EMERGING PRIORITIES FOR GLOBAL HEALTH

Initial outcomes of a comprehensive care model for patients with sickle cell disease in a tribal population in rural Western India

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Program Purpose: Sickle cell disease (SCD) is the most prevalent worldwide-inherited blood disorder, and is increasingly recognized as a neglected chronic disease. India claims 15% of the world's neonates born with SCD every year. Several cost-effective interventions have dramatically reduced morbidity and mortality from sickle cell disease in the US. However, access to care for SCD is unavailable in most rural tribal regions with the highest SCD prevalence in India. In 2014, we implemented a comprehensive care model at SEWA Rural, a non-profit health and development organization in Gujarat, India, with the aim of providing high quality comprehensive screening and treatment for sickle cell disease.

Methods: Since 1980, SEWA Rural has operated the local public health care delivery system in partnership with the Government of Gujarat, including a 100-bed hospital with robust outpatient care system and community health worker model. In 2014, we implemented a comprehensive sickle cell treatment program. Components of the intervention include: universal newborn, antenatal and family screening; outpatient sickle cell clinic with pneumococcal vaccination, penicillin prophylaxis, and hydroxyurea for severe SCD; inpatient protocols for SCD crises; chronic disease registry with longitudinal population management; and health education and outreach via sickle cell health worker.

Outcome and Evaluation: In 2014 alone, 7832 patients were screened for SCD in SEWA Rural with 176 patients being diagnosed with SCD. Since February 2014, 370 SCD patients have been enrolled into the comprehensive care program to date. Of the 182 SCD patients followed for one year after enrollment, 134 (73.6%) of patients received pneumococcal vaccination, 8 (4.4%) of children under five were taking penicillin prophylaxis, and 128 (70%) were taking folic acid supplementation. Also, 23 (15.5%) patients had SCD crises, 21 (11.5%) were hospitalized, 10 (5.5%) received blood transfusions, and 3 died.

Going Forward: This study demonstrates acceptability and feasibility of implementing a continuity care model for sickle cell disease in rural India. Further research is needed to evaluate the impact of the comprehensive sickle cell program on clinical and quality of life outcomes and retention in care.

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None for research.

Abstract #: 2.001_NEP

Trend in patient outcomes over time in a new tertiary surgical center in rural Haiti

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Background: Surgery is an increasingly recognized global health priority—5 billion people worldwide lack access to surgical care. As surgical systems develop in low-and middle-income countries (LMIC), it is crucial to assess progress in both increasing volume and improving quality. Overall perioperative mortality in LMIC surgical systems is 1.2% for planned procedures and 10.1% for emergent cases. A hospital in Central Plateau, Haiti, recently developed a surgical department and residency, vastly improving access to surgical care in an underserved region. As the capacity to provide surgical care is rapidly scaled up, early integration of safety monitoring and evaluation is critical to ongoing progress. We examine the ability of a new teaching hospital in a low-income country to monitor mortality and how this rate changes over time.

Methods: We conducted a retrospective study of all general surgical cases performed at a teaching hospital in Central Plateau, Haiti, from October 2013 to March 2015. Patient demographics and surgical procedural data were recorded at the time of procedure. Perioperative mortality (POMR) was recorded and discussed in weekly conferences. Data was analyzed on a quarter-year basis. POMR was defined as in-hospital deaths divided by the number of procedures performed.

Findings: From October 2013 to March 2015, 3221 non-obstetrical surgical procedures were performed. The mean patient age was 34 years with a female:male ratio of 44:53. Weekly operative caseload increased 4-fold from 19 to 80. Overall perioperative mortality rate was 2.2%. Linear regression revealed that mortality rates decreased over time from 3.2% in the first quarter to 1.8% in the last quarter ($p=0.04$, $R^2 = 0.69$). Of the 77 postoperative mortalities, 31% (24) followed exploratory laparotomy and 16% (12) followed lower extremity amputation.

Interpretation: Perioperative mortality can be monitored in an LMIC teaching hospital. The mortality rate during the first years of operation is in keeping with reported rates in LMIC surgical literature. In addition, the decrease in mortality rate demonstrates that a rapid scale-up of surgical services can be undertaken safely in an LMIC teaching hospital. In the future, we hope to identify patient characteristics associated with an increased risk for complications in this setting.

Funding: None.

Abstract #: 2.002_NEP

Pediatric inguinal hernia repair is safe and inexpensive in a resource-limited setting: a case series from Central Haiti

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Background: At this year's WHO World Health Assembly, a resolution was passed to include essential surgical care as an integral component of universal health coverage. The current notion is that surgical care provision is too expensive, and that providing essential surgical care in resource-limited settings is an insurmountable obstacle. In Haiti, inguinal hernias present a significant surgical burden: total years of life lost (YLL) in the pediatric population due to hernia complications in 2013 were 824 years. The purpose of this case series was to examine the cost and outcomes of inguinal hernia repair, the most common elective pediatric surgical procedure, in a resource-limited setting. The hypothesis is that surgical care provision can be done in a safe and low cost manner in a resource-limited setting.

Methods: A case series was conducted of pediatric patients presenting to outpatient clinic for elective inguinal hernia repair. Surgical procedures were carried out at a newly built tertiary hospital in Central Plateau, Haiti. A pediatric surgeon performed all surgical procedures with the assistance of surgical residents. We determined the cost of intervention and postoperative outcomes, namely complication and mortality rates. Cost was calculated in US dollars and included cost of OR time, expendable supplies, and pre-operative and post-operative clinic visits.

Results: A total of 17 patients presented for 19 elective inguinal hernia repairs from August 18 to September 22, 2015. Average age at presentation was 6.2 years, and 82% were male. All procedures were ambulatory with morbidity and mortality rates of 0%. The total cost of intervention was \$110.03.

Conclusions: We conclude that performing elective inguinal hernia repairs is safe and inexpensive in a resource-limited setting. As inguinal hernias represent a significant burden in the pediatric population, essential pediatric surgical care should be a priority for national health programs in resource-limited settings.

Abstract #: 2.003_NEP

Negative mental status analysis based on SinaWeibo in college students

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Background: Mental health for the undergraduates in China has long been a serious social problem. Traditional methods to the census for the problem is via questionnaires, which is limited in the statistical size. In this study, we use the contents of SinaWeibo, a popular Chinese microblog platform with tens of thousands of college students in mainland China, to investigate the negative mental status for the college students in China.

Methods: 500,000 college students' SinaWeibo accounts in the platform were used. Their contents from January 2014 to Aug 2014 were crawled. An emotional energy level, which was developed by a psychologist David R Hawkins, was taken as the basis to divide the student's emotion into three parts—positive, negative and neutral status. An ontology-based semantic analysis method was used to analyze the microblog data. In addition, some specific words, including: *suicide*, *death* and so on, were selected to identify some extremely depressed cases.

Findings: The result shows that 64.38% of Sina microblog data reflects positive or neutral mental status, and the ratios of negative psychological status is 35.62%. In the negative group, the proportion of male and female is 42.3% to 57.7%. It seems that female students are more likely to get into depressed modes. The ratio of the content publication time (daytime *vs.* night) is 18.4% to 81.6%. Regarding the reasons for negative mental status, we found that the top five influence factors are: employment; affection; education; friendship and economy. Although the extreme SinaWeibo contents are only 5,276, these cases deserve special attention.

Interpretation: The analysis shows that about one third of the college students have negative mental status in China. Results suggests that the social media, e.g., SinaWeibo, may be an effective approach to investigate the mental health. It is worthy of exploration for managing mental health in global health field.

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Abstract #: 2.004_NEP

Healthy garden and healthy mind

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Background: A creative intervention could integrate mental health into primary care services for those who suffer illnesses from food insecure, poor diet and inconsistent access. This stipend pilot program engaged clients of soup kitchen to work in the community garden, may promote future program in New Brunswick, New Jersey.

Methods: The project ran from July to October 2015. 13 participants were recruited through HIPHOP-Promise Clinic and Elijah's Promise Soup Kitchen. Pregnant women, illness preventing outdoor activities and suicidal clients were excluded. Participants gave written informed consent and worked in Shiloh Community Garden 3 hours per session, twice a week for 15 weeks. Health assessments (weight, height, BMI, waist circumferences, blood pressure, PHQ-9 depression scales) were done pre-, midpoint and post-gardening by medical team (RWJ Medical School) using observational method. Landscape team (Rutgers University Landscape Architecture department) built garden beds and collect sketchbook reflections. Gardening team (Elijah's Promise and Community Garden Coalition & Food Alliance) provided instructions on basic gardening and beehives skills. 3 female and 6 male adult participants completed project. The sketching or written reflection of each gardening session has become effective intervention for individuals, and team building vehicle. This project provided social interaction and friendship. Rutgers IRB approved the study Pro20150001770.

Findings: 9 of 13 participants completed project, demonstrated 100% improvement on PHQ-9, and 50% showed improvement on blood pressure, BMI and waist circumferences. 171 written/drawing reflections were therapeutic for them.

Interpretation: Extremely hot weather in July and early frost in October limited the harvest. The transient homeless clients migrated away and lost access to public transportation.