

CHAPTER 33

HOME SCIENCE

Doctoral Theses

01. GUSAIN (Yamini)
Chronic Disease Markers in Indian Children (Aged 8-14 Years) Born with Low Birthweight at Term.
Supervisors: Prof. Shipra Gupta & Prof. Geeta Kumar
Th 28333

Abstract

Low birth weight (LBW) is a major public health problem in India with consequences in the short and long-term including an increased risk of obesity and its related comorbidities including type 2 diabetes and cardiovascular disease (CVD) in later life. Despite its prevalence, there is limited data on the association between LBW and markers of Non-Communicable Diseases (NCDs), particularly among full-term LBW Indian children. Thus, this cross-sectional follow-up study investigated anthropometric parameters, adipokines, and chronic disease biomarkers in 667 term-born LBW children aged 8–14 years from the Delhi Infant Vitamin D Supplementation (DIViDS) cohort. For comparison, neighbourhood children born fullterm with normal birth weight (NBW) (>2.5 kg) (n=87) were also assessed. These children were assessed on their dietary intake and household food insecurity status as well. LBW children had lower height-for-age, body mass index for-age (BMIZ), and waist circumference compared to NBW children. Overweight LBW children had higher leptin, triglyceride and VLDL, and lower HDL, compared to NBW children in the same BMIZ category. Currently underweight LBW children had higher adiponectin and lower leptin levels than the reference group. There were no differences between LBW and NBW children in visfatin, fasting glucose and insulin, hemoglobin A1c, triglyceride, low density lipoprotein or C-reactive protein. While differences in chronic disease markers were minimal at 8–14 years, overweight status was associated with increased risk markers and may worsen over time. NBW children had a higher intake of nutrients and food groups compared to LBW children. Timely nutritional counselling and monitoring of LBW children are essential to mitigate potential risks of developing chronic diseases in the future.

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02. KAUSHIK (Anu)
Development and validation of a Dietary adherence tool for patients with Type 1 Diabetes Mellitus.
Supervisor: Prof. Bani Tamber Aeri
Th 28332

Abstract

Introduction: In Type 1 diabetes Mellitus (T1DM), adherence to insulin therapy and dietary advice are crucial to maintain good glycaemic control. Objectives: To develop and validate a tool to assess dietary adherence among T1DM patients, to assess the association of dietary adherence levels with metabolic parameters and to identify barriers and facilitators of dietary adherence among T1DM patients. Methodology: Development and validation of the tool – “Rapid Dietary Adherence Tool for Type 1 Diabetes” (RDAT-T1D) was based on literature review, Content validation and reliability. Pearson’s correlation coefficient with 2 days 24-hour dietary recall and an index of good model fit test for four indices was assessed for tool’s final validity. Data on patient profile, anthropometric and biochemical parameters, dietary intake, dietary adherence barriers/facilitators was collected from 231 T1DM patients from AIIMS, New Delhi. Results: RDAT-T1D consisted of 12 questions, each with scoring of 0-7. The Pearson’s correlation coefficients were significant for 11 questions. The reliability of the tool was 0.7217. Two indices out of four gave perfect fit for every question in the tool, indicating that the tool is sensitive. As dietary adherence improved the anthropometric and biochemical indices also improved though the association was not statistically significant. Major barriers to dietary adherence were regular meal timings, stress, fear of stigma, liking junk food, eating during celebrations, expensive food items. While, facilitators were good dietary counselling, frequent follow up with doctors, supportive hospital staff, easy to cook recipes in the prescribed diet chart. Conclusion: RDAT-T1D is a valid, sensitive and reliable tool to measure dietary adherence among T1DM patients. An association, though not statistically significant, between the adherence scores and anthropometric and biochemical measures was seen. Also, to overcome the barriers to diet adherence among T1DM patients, personalized diet counselling and advices are of utmost importance.

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03. RAHEJA (Radhana)
Study of the Scientific Phenomenon behind the Degradation of Warak Printed Textiles of Rajasthan and Formulation of Conservation Procedures for Storage and Cleaning.
 Supervisor: Prof. Simmi Bhagat
Th 28712

Abstract

India has nurtured a rich legacy of handicrafts, with textiles standing out as among the finest examples of artistic ingenuity and craftsmanship. Within this tradition, the art of Warak printing—where gold or silver metal leaf is transferred onto fabric using a binding medium—holds particular historical and cultural significance. Literary references trace its origins to the Mughal era, when it was employed in ceremonial and royal objects. With the decline of royal patronage it became a languishing craft, surviving today only through a few practitioners. Despite this, museums in Rajasthan house a remarkable corpus of Warak printed textiles, though most exist in fragile and deteriorated condition, highlighting the urgent need for scientific conservation. This study documents this languishing craft of Warak printing, highlighting the evolution of the craft over the years, the present-day status and the process of manufacturing. Drawing on the process of deterioration studied through

museum objects, the study further scientifically analyses this process of degradation. Simulated silver Warak printed samples, produced by a traditional artisan from Udaipur, were subjected to accelerated ageing followed by controlled exposure to moisture, study of the effect of solvents and experiments with administration of chelating agents through gels for the purpose of tarnish removal on silver. Qualitative and quantitative analytical methods including microscopic evaluation, FTIR, SEM-EDX, XRD, tensile strength, bending length and spectrophotometric measurements revealed that moisture significantly altered the binding medium, underlining the necessity of carefully regulated humidity during storage and treatment. Analytical data also revealed the successful cleaning of warak printed textiles with solvents and chelating agents administered through gels. Drawing on these findings, the research proposes preventive and curative conservation strategies, including improved storage protocols, that can help safeguard Warak printed textiles for future generations while aligning with sustainable conservation practices.

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04. SURBHI
Understanding Interpretative Dynamics of Gender Role Development among Adolescents in National Capital Region (NCR).
 Supervisor: Prof. Sarita Anand
Th 28334

Abstract

This study explores how adolescents growing up in the National Capital Region (NCR) make sense of gender roles in their everyday lives. Adolescence is a formative time for identity formation, which has been underexplored especially in the context of intersecting social identities of NCR adolescents. Drawing on social learning and constructionist perspectives, the research uses mixed methods approach through quantitative and qualitative tools to understand how adolescents manifest explicit and implicit gender biases that ultimately reflects on their self-concept. Findings reveal socio-economic differences and intergenerational transmissions influencing gender attitudes. The study conclusion highlights the influence of media—particularly social media and OTT platforms—as emerging sites of socialisation. It offers timely recommendations aligned with the National Education Policy 2020, contributing to inclusive, evidence-based strategies for gender-responsive education and youth development.

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05. THAKUR (Sunaina)
Determinants of consumption of safe and nutritious food among adolescents (10-19 years) in Delhi.
 Supervisor: Prof. Pulkit Mathur
Th 28713

Abstract

This study identified determinants of consumption of safe and nutritious food among adolescents (10-19 years) in Delhi. In phase-I, online questionnaires assessed impact of COVID-19 on food safety practices (n=325), eating habits, and lifestyle (n=310) of families. A mixed-method study in phase-II was done in 4 private schools of Delhi. Adolescents (n=1353) and their parents (n=877) were selected using purposive and convenience sampling. Participants completed validated questionnaires or focus groups discussions/in-depth interviews on either food safety or nutrition related knowledge, attitude and practices, perceived barriers and facilitators. Immunity boosting ability of food (45%) was the major factor determining food choices of families during the pandemic. Most adolescents and their parents demonstrated acceptable to good knowledge, attitude and practices related to food safety levels. Higher knowledge scores, positive attitudes, and less of barriers and more of facilitators were essential to promote good food safety practices ($p < 0.05$). In terms of prediction of healthy and unhealthy food consumption based on individual factors, adolescents helping with food preparation ($\beta = 0.37$, 95% CI: 0.22, 0.23, $p < 0.001$), eating breakfast regularly ($\beta = 0.28$, 95% CI: 0.05, 0.51, $p = 0.019$), and having higher self-efficacy ($\beta = 0.34$, 95% CI: 0.24, 0.44, $p < 0.001$) were positively associated with higher fruit and vegetable intake, while frequent eating out ($\beta = 1.98$, 95% CI: 1.62, 2.33, $p < 0.001$) or ordering food ($\beta = 2.27$, 95% CI: 1.97, 2.56, $p < 0.001$) was linked to higher HFSS consumption. Home availability of unhealthy foods positively influenced HFSS intake ($p < 0.001$), while fruit and vegetable accessibility promoted healthy eating ($p < 0.001$). Parental modeling ($\beta = 0.24$, 95% CI: 0.17, 0.30, $p < 0.001$) & pressure to eat vegetables ($\beta = 0.55$, 95% CI: 0.37, 0.73, $p < 0.001$) were positively associated with higher fruit and vegetable intake among adolescents. Future research should consider designing intervention studies focused on peer-support models and parental involvement to promote safe and nutritious food intake and healthy lifestyle practices among adolescents.

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06. VASHISTH (Shachi)

Study of Challenges Faced by Teachers in the Implementation of Curriculum in Government Preschool Education Centres in Delhi.

Supervisors: Prof. Veenu Wadhwa & Prof. Reetu Chandra
Th 28335

Abstract

A well-structured curriculum is central to delivering quality pre-primary education. High-quality early childhood education (ECE) depends on defined learning outcomes and competent educators. However, effective curriculum implementation often faces several challenges, especially in government-run schools. This study explored the barriers faced by pre-primary teachers in implementing the curriculum across government schools in Delhi, particularly those under MCD and DoE administrations. A sample of 164 teachers (82 each from MCD and DoE schools in East Delhi) was selected using random sampling. A mixed-methods approach was employed, utilizing tools such as ECEQAS, interview schedules, and checklists to assess curriculum structure and delivery. Data were analyzed using Microsoft Excel. Key challenges identified included high pupil-teacher ratios, multi-age classrooms, inadequate pre-primary training, lack of teaching materials, poor infrastructure, and

limited administrative support. Additional issues included insufficient understanding of the NCERT curriculum, irregular assessments, ineffective classroom organization, and limited teacher-child interaction. These challenges were rooted in systemic gaps, including a disconnect between curriculum guidelines and classroom practices. The study highlights the need to enhance teacher training, ensure adherence to national curriculum frameworks, and improve resource allocation. Finally, the research also included teacher's proposed strategies to address these issues, such as increased flexibility in classroom management, enhanced professional development, stronger administrative backing, and improved infrastructure. National-level policy documents also emphasize the need for contextualized training, technology integration, and specialized resources. These combined insights underscore the importance of a multifaceted approach to overcoming the challenges and improving the overall effectiveness of curriculum implementation in pre-primary education. Keywords: Curriculum, Preschool Curriculum, curriculum implementation, pre-primary teachers, Government pre-primary centres.

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