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Work Related Quality of Life and HIS Usability:

An Examination of Human Factors' Impact on
Electronic Health Record usability
during the Adoption of a New Electronic Health Record
System in Norway

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Presented by

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- Presented by Ove Lintvedt
- educated as an IT engineer, business economist, and clinical psychologist specializing in clinical adult psychology. Holds a PhD in the intersection of IT and mental health.
- Current research focuses on:
 - 1) The Valkyrie Project: This groundbreaking initiative aims to develop a technical system that ensures the right clinician has access to the correct information at the right time, regardless of the patient's treatment history. By analyzing health service utilization and patient treatment pathways, the project focuses on patients with complex disorders, potentially revolutionizing healthcare delivery.
 - 2) The NINe Project (National Implementation-research Network eHealth): Implementation research is vital for interpreting, bridging, and mediating knowledge and needs dissemination. The focus is developing national-level indicators for eHealth implementation research and collaborating with NeRN. The goal is to strengthen evidence-based practice in the field.

A 3D puzzle with one red piece standing out against a background of blue and white pieces. The red piece is the central focus, positioned in the middle of the frame. The blue pieces are on the left, and the white pieces are on the right. The puzzle pieces are interlocking, and the red piece is the only one that is not connected to the rest of the puzzle.

Introduction

- Rapid advancements in Electronic Health Records (EHR) systems over the past two decades
- Critical implementation challenges beyond technical innovation
- Example: ICT issues in Norwegian hospitals leading to clinician burnout
- Need for EHR systems that support work processes and reduce stress



Background



STUDIES SHOW POOR USABILITY OF
EHR SYSTEMS CAUSES STRESS
AMONG HEALTHCARE WORKERS



NORWEGIAN GOVERNMENT'S
INITIATIVE TO IMPROVE EHR
INFORMATION FLOW SINCE 2021



IMPLEMENTATION OF DIPS ARENA
EHR SYSTEM IN THREE HEALTH
REGIONS IN NORTHERN NORWAY

Research Gap and Objectives

- Existing research focuses on technical aspects, overlooking human factors
- Importance of understanding human factors like Work-Related Quality of Life (WrQoL) in EHR usability
- Research Questions:
 - What is the effect of WrQoL on usability (NUHISS)?
 - Does the impact of human factors on EHR usability vary according to demographic and professional characteristics?



Methods - Setting

- Focus on Northern Norway Regional Health Authority
- Transition from DIPS Classic to DIPS Arena EHR system completed in 2021
- Study conducted in three hospitals: University Hospital of North Norway (UNN), Nordland Hospital (NLSH), and Finnmark Hospital (FSH)



Methods - Data Collection

- Survey based on validated questionnaires from 2016 and 2018
- Instruments used: Work-Related Quality of Life scale (WrQoL) and National Usability-focused HIS Scale (NuHISS)
- Survey administration through LimeSurvey program
- Anonymity and relevance assured for participants





Participant Demographics

Sample: 603 hospital employees, 221 completed the survey (36.5% completion rate)

Distribution: 25.8% physicians, 37.1% nurses, 37.1% other professionals

Gender: 70.6% female

Average years of experience: 17 years



Analysis Methods



Use of Analysis of Variance (ANOVA) to determine the effect of WrQoL on NuHIS



Significance level: $p = .05$



Analysis in three steps: overall groups, individual groups, and interactions between WrQoL and demographic factors



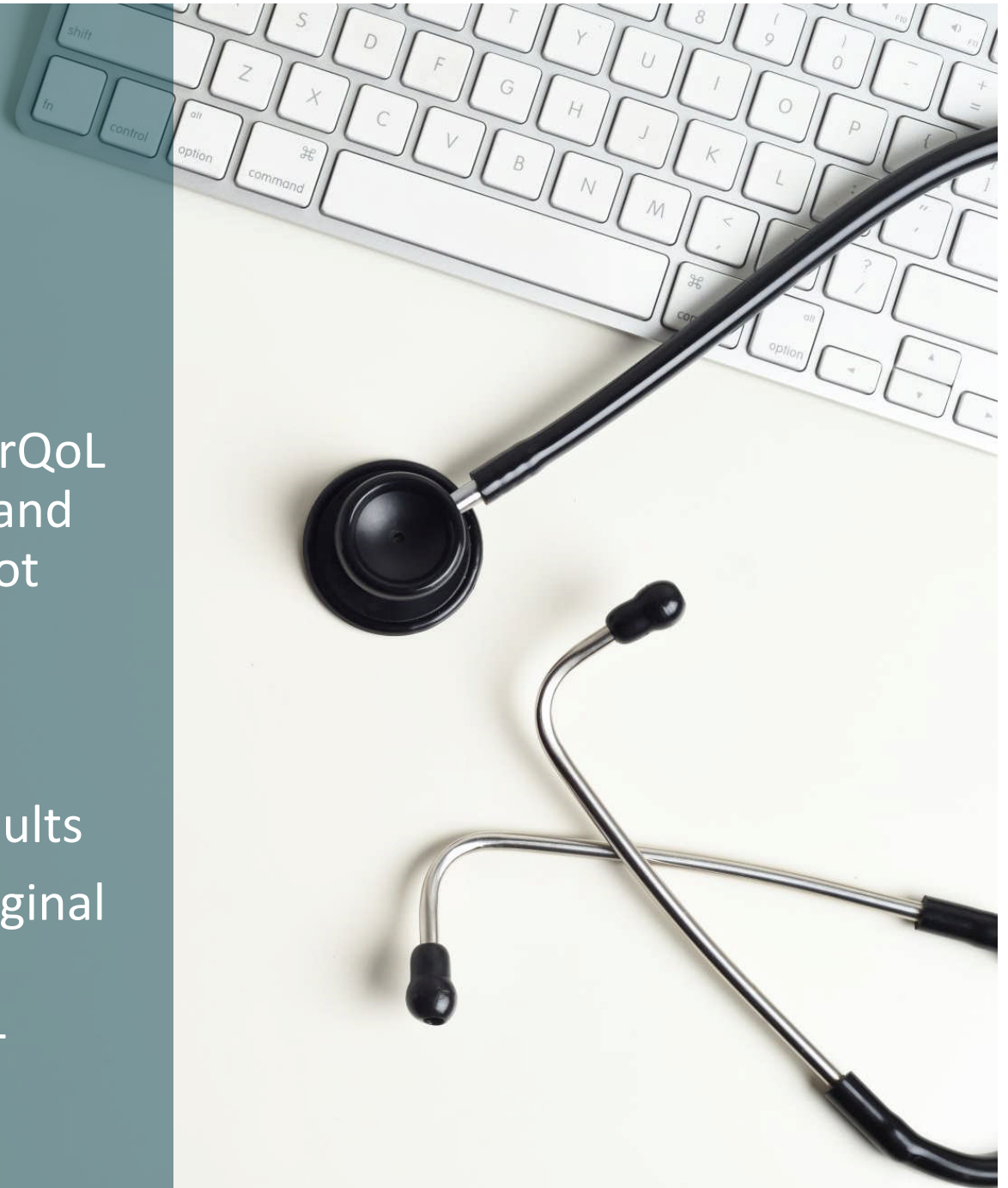
Missing data handled using expectation-maximization (EM) algorithm

Results - Overview

- Significant relationship between WrQoL and NuHISS across all professional groups
- Differences observed in the impact of WrQoL on NuHISS scores by profession, age, and gender

Results by Profession

- Significant effect of WrQoL on NuHISS for nurses and other professionals, not for physicians
- Combined group of physicians and nurses showed significant results
- Graph: Estimated Marginal Means of NuHISS by profession and WrQoL



Results by Age

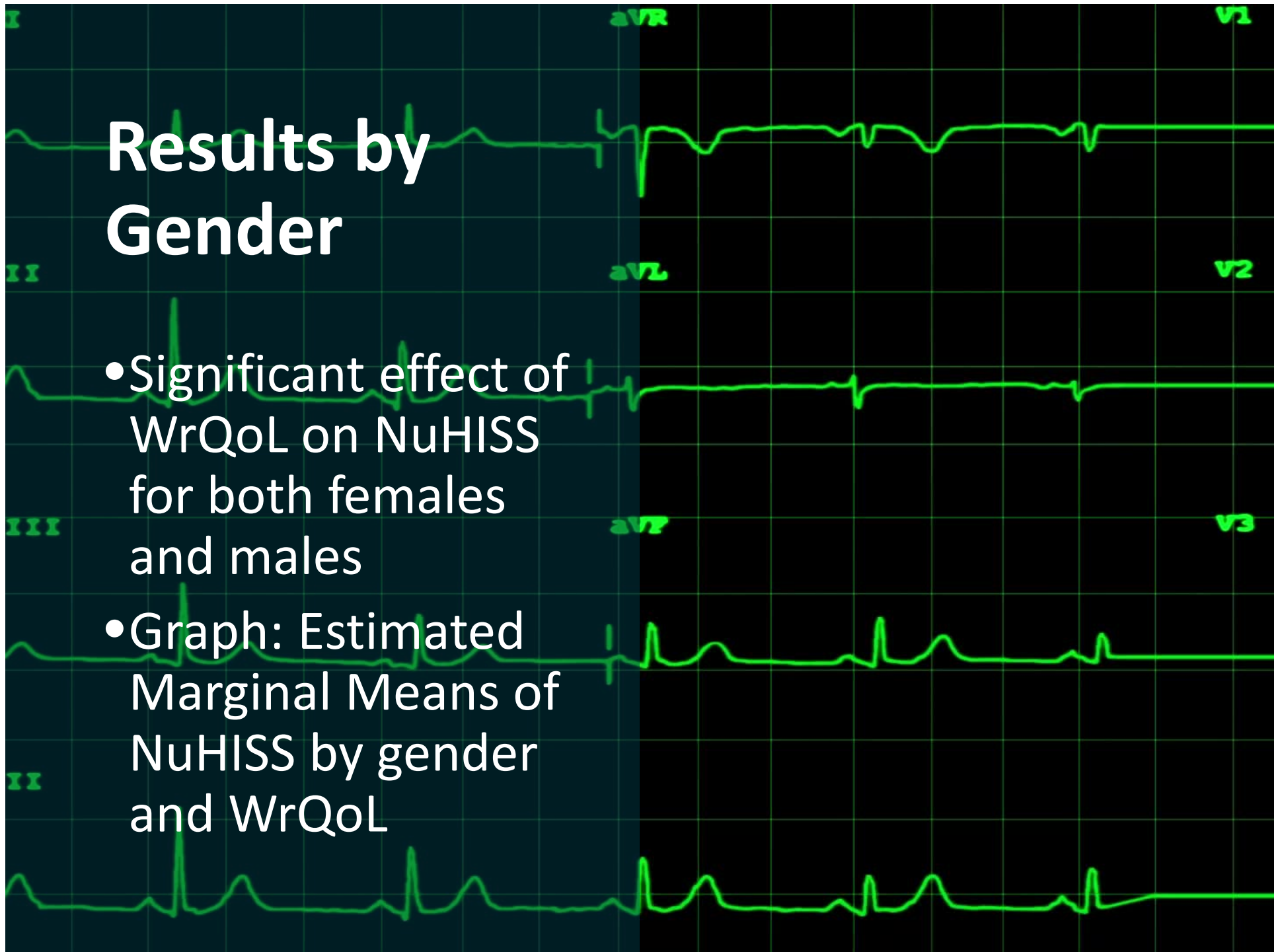
- Significant effect of WrQoL on NuHISS for the age group 50-59
- Trends observed for other age groups except 18-29
- Graph: Estimated Marginal Means of NuHISS by age and WrQoL

289.33

33

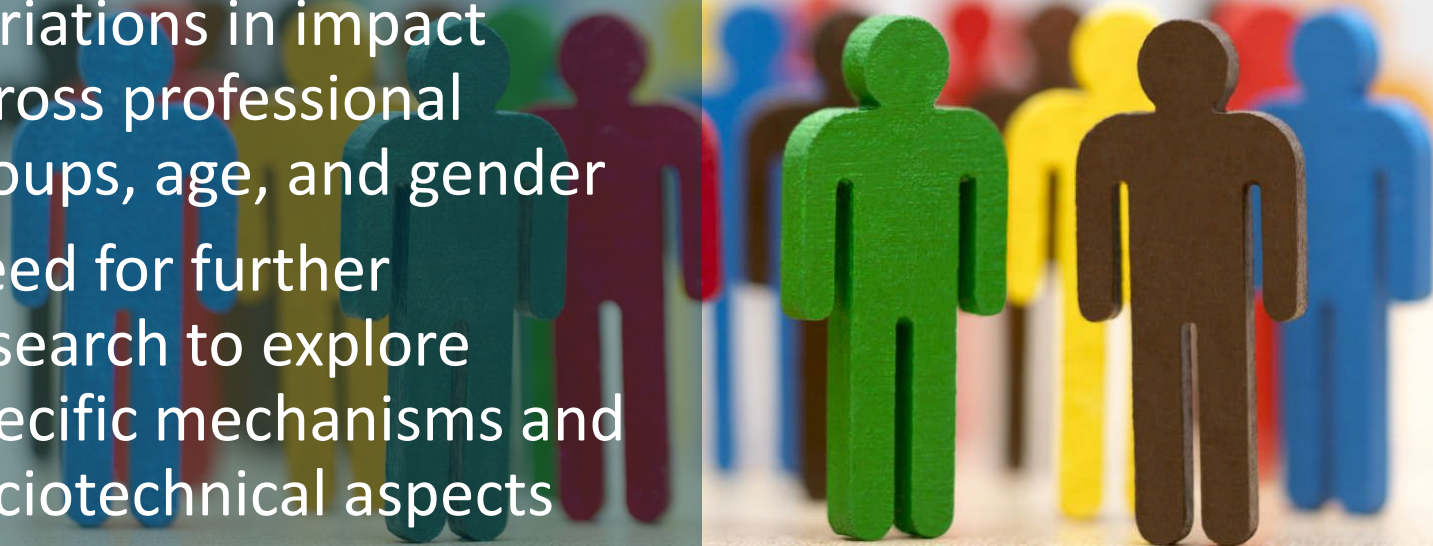
Results by Gender

- Significant effect of WrQoL on NuHISS for both females and males
- Graph: Estimated Marginal Means of NuHISS by gender and WrQoL



Discussion

- Importance of human factors in EHR system usability
- Variations in impact across professional groups, age, and gender
- Need for further research to explore specific mechanisms and sociotechnical aspects



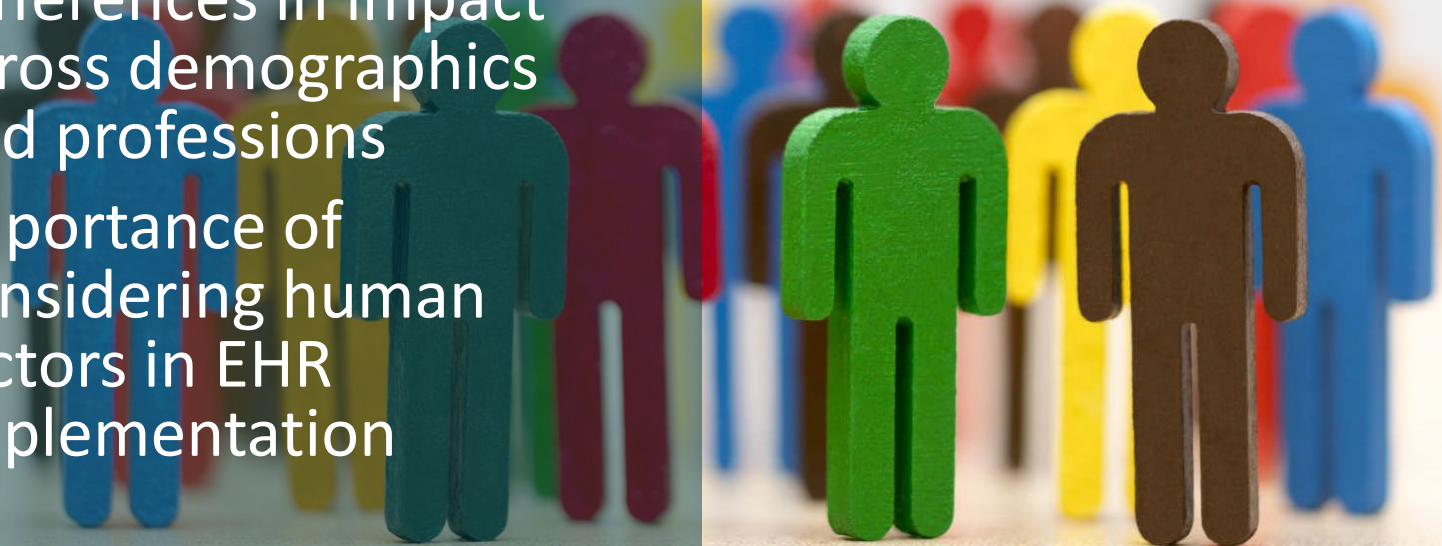
The background of the slide features a close-up, artistic photograph of laboratory glassware. In the upper half, several clear glass pipettes are shown in a row, with small, glistening droplets of liquid suspended at their tips. Below the pipettes, a multi-well microplate is visible, its numerous wells creating a grid-like pattern. The lighting is soft and focused, highlighting the textures and reflections of the glass and liquid. The overall color palette is a mix of cool blues and greens, with a slight purple tint in the lower right area.

Limitations

- Study limited to Northern Norway hospitals
- Small sample sizes for specific subgroups
- Potential biases due to recruitment methods and non-responses

Conclusion

- Significant relationship between WrQoL and EHR usability
- Differences in impact across demographics and professions
- Importance of considering human factors in EHR implementation



Future Research

- Need for follow-up studies to explore underlying dynamics
- Qualitative methodologies to understand user perspectives
- Exploration of organizational factors and access to comprehensive patient history (e.g., Valkyrie project)
- => in progress

