MIT Sloan HSI Employee Population Health Lab Workshop

October 24, 2024

The MIT Sloan HSI Employee Population Health Lab provides opportunities for self-insured employers working to collaborate with MIT researchers and other industry participants to develop and rigorously test ideas that improve employee physical and mental wellbeing. In a time when businesses are increasing their investments in this area, hoping to also reduce healthcare costs and improve productivity, the HSI Lab aims to create and validate evidence-based recommendations with rigorous research that will result in real, sustained benefits.

The participants at the October, 2024 HSI Lab Workshop learned of new results from ongoing work with Quest Diagnostics, Amwell's Silvercloud group, and Erin Kelly's findings on worker wellbeing research. HSI Director Anne Quaadgras led a fireside chat with Ruben Sigala, Chief Marketing and Analytics Officer of Well.co, exploring Well's data-driven approaches and potential collaborative research opportunities. The day's sessions closed with HSI Advisory Board member Rebecca Schechter moderating a panel on industry perspectives on fostering employee health that surfaced additional avenues for collaborative research.

Corporate Wellness Industry Overview

The day started off with an overview of the corporate wellness industry. In sum, there are billions of dollars at stake and the market is expected to increase. Currently, the United States accounts for 40% of the global $42 billion industry, which is expected to grow to more than $100 billion by 2033. The industry can be divided into three market segments:

- Wellness and workplace screening programs
- Disease screening and management
- Mental health support programs

Wellness and workplace screening accounts for about half of the market; the other two segments share the remaining half about equally. Given the potential revenue, companies are eager to enter the industry and employers are interested in offering some of these benefits.

However, the picture becomes murky when trying to make the business case. Many programs struggle with employee engagement, in both enrollment and retention. Further, there is scant scientific evidence of these programs' clinical effectiveness and positive return on investment.

Fortunately, rigorous analytics and appropriate interpretation are specialties of HSI researchers. Several research teams collaborating with HSI Lab member companies, Amwell Silvercloud, and Quest Diagnostics, are applying their skills to the most pressing questions. Providers of these services want to be able to prove that their offerings move the needle on health outcomes. Their potential customers, employers. want their employees to participate and capture the cost savings that may be associated with these programs.

The rest of the workshop consisted of presentations and discussions that addressed these challenges.

Workshop Themes

A few themes emerged across panels, speakers, presentations and discussions.

Technology:

Technology in and of itself is not a problem solver. Neither is talking up the benefits of AI/ML and new algorithms. Rather, discernment is required to use technology appropriately. Technology should foster the trust, actions and behaviors that lead to better health outcomes. There may be a place for a technology or program that does not lead to be better health; it could be a recruitment tool. However, such a program is unlikely to foster retention.

Personalization:

Every session brought up the importance of personalization. One of the industry panelists said, "don't think of employees as a monolith." Well.co and Amwell Silvercloud both focus on ensuring that their programs are tailored to specific employees as much as possible. Well.co adapts lessons learned from the consumer goods industry, in which companies have many more interactions with customers than healthcare does. HSI researchers are collaborating on several research projects with Amwell Silvercloud to discover how to best match supporters and users based on specific characteristics.

Trust:

Trust is required on two specific vectors. A user needs to trust both the content of a program as well as the intent of the program's developer. The information provided needs to be correct and the user needs to trust that their information is safe. Personalization and trust help a program to level-set so it meets users where they are. Users need to be given achievable and actionable goals in order to stay engaged.

Human Interaction:

Successful programs don't solely rely on technology for personalization. Repeatedly, speakers spoke about the necessity of human interaction as a part of the technology platform. Personalization and human interaction together are more likely to inspire trust in the program. This gives the user a chance to develop more of a relationship with the platform, or as one person noted, "a trusted dialog".

Engagement requires trust. Despite best efforts, however, engagement remains one of the most confounding elements of a successful wellness program. Wellness program providers struggle with both enrollment and retention. Some have found that financial incentives work, but there are also cases where incentives have failed to move potential users.

If engagement had a competitor for theme of the day, it would be program effectiveness. Clearly, employers are interested in programs that work, that move the needle on health. However, proving what works has not always been easy, and most programs have not been rigorously tested. Prof. Joe Doyle is applying randomized control trials (RCTs) to wellness programs in order to be able to make a causal connection between use of the program and a desired outcome. Two of his recent RCTs -- "hot spotting" in Camden and Geisinger's Fresh Food Farmacy, which used healthy food 'prescriptions' to help patients control their diabetes – surprised proponents by showing no significant impact of the program: the control group did just as well (statistically) on the measured outcomes as the treatment group. Prof. Doyle plans to conduct a similar analysis on some of the programs discussed at the workshop. The goal is to come up with meaningful and actionable interventions that provide a path toward wellness that is attributable to the intervention.

Summary of Key Points (ICYMI)

What follows is a recap of key points for each workshop session. These are not intended to be exhaustive summaries, but list only the most salient or most talked-about points. Where available, links are provided for pertinent articles or papers.

Quest Diagnostic Research Findings ([Prof. Joe Doyle](#), MIT; [Prof David Molitor](#), U Illinois, Nick Torsiello, [Quest Diagnostics](#)

- Initially looked at data and analyzed retrospectively, with multiple findings:
  - Low participation rates in diabetes prevention program even when the qualifications for participation were expanded
  - Worsening health such as increase in depression, anxiety or weight may motivate engagement
  - The data appear to suggest that there is a reduction on healthcare spending by those who participate compared to those who do not engage. However, without a prospective study, it is not possible to attribute the decrease to engagement in the diabetes prevention program.
- Prof. Joe Doyle is leading a research team conducting a prospective study on employee enrollment in a wellness program by testing different types of messaging. The team will test whether engagement increases with opt-out messaging (vs. the default opt-in messaging), and whether those who choose to participate experience better health outcomes than those who do not.
  - The team is implementing a randomization study design; RCT results allow the researchers to make statistically significant statements about causation. The study will involve at least 2000 people, half each to the control and treatment groups. The research team will monitor engagement and outcomes for a year after the start of the trial.
- Going forward, they would like to continue studying outreach campaigns, investigate whether financial incentives make a difference and research annual risk assessment results messaging. The intent is to develop an interpretable health score that provides both information and suggestions for action, with a goal of… [improving outcomes by increasing engagement?].

[Professor Erin Kelly](#): Worker Wellbeing Research Findings

- Does A New Voice Channel Reduce Turnover and Improve Worker Wellbeing? Evidence From a Cluster - Randomized Trial In U.S. Fulfillment Centers
- Research site was not Amazon. Survey population was whoever was working at the time of survey. Kelly did not follow a single cohort. Design: Cluster-Randomized Trial in 16 sites.
- The intervention was setting up Health and Well-being Committees (HaWC), which were composed of both associates and supervisors. HaWC hear and prioritize employee concerns and create action plans,
- Results: HaWC reduce the risk of job exit 20% below baseline exit rate of 6.6% in a given month at 12 months after launch of intervention and

- Employees in HaWC buildings have 33% lower odds of moderate or severe psychological distress at six months.
- Paper published in PLOS ONE: [The Fulfillment Center Intervention Study: Protocol for a group-randomized control trial of a participatory workplace intervention](#)

Fireside Chat: Dr. Anne Quaadgras, Director HSI and Ruben Sigala, Chief Marketing, Data and Analytics Officer, Well.co

- Well.co offering is a series of modules to a client's employees that are chosen based on two to three years of client claims data. Some modules apply to everyone.
- User experience: the service is presented in a way that is familiar to users and written at a sixth-grade level. Read – click – reward cycle. The challenges are very achievable and do not take a lot of time.
- Goal of 300 interactions per member per year – similar to consumer industry, though unusually large for healthcare.
- Create a "trusted dialog" with the user; client company then has a lot of options of how to take advantage of that.
- Must have a human available to the user, not just a tech experience. If the user has an interaction with a "Well Guy" early on, they are likely to stay engaged with the service.
- Well system is integrated with Apple Health, Google Health and users are incentivized to allow that connectivity.

Digital Mental Health Research and Findings

Angel Enrique: Amwell Silvercloud Overview
- Company's DNA is as a thought leader based on scientific evidence-based research
- Offering: Internet-Delivered [Cognitive Behavioral Therapy](#) (iCBT): scalable, personalized, and effective
- Spanning the patient journey: sign-up, baseline testing, bi-weekly assessment using proven diagnostic tools and research data collection, discharge
- HSI researchers are collaborating with Amwell Silvercloud on three projects.

Brian Liu and Prof. Rahul Mazumder
- Developing interoperable machine learning methods to better understand how features impact treatment outcomes for mental telehealth programs.
- Key questions for predicting program outcomes in mental telehealth:
  - Can we predict patient-level program outcomes for patients undergoing telehealth treatment for depression and anxiety?
  - What attributes drive successful program outcomes?
  - Can we determine early warning signals on whether a program is likely to be successful?

Prof Joe Doyle and Aziz Malouche
- Researching the relationship between supporter characteristics and client outcomes. Key questions:
  - Gender concordance: do female supporters get better results for female clients?

- o Experience: how do client improvements vary across experience levels within supporters?
- o Heterogeneity: how do client improvements vary across supporters?
- o Do the above vary by type of client, such as those with higher or lower baseline measures of the outcomes?
- The results could have implications for client matching.

Joyce Luo, Max Tan, Prof. Dessislava Pachamanova (Babson), and Prof. Georgia Perakis

- Research Questions: How does supporter behavior (i.e. timing of review, content of review, language in review) impact client completion? Can we recommend optimal review timing and language that will improve client completion rates and client questionnaire outcomes? How can we personalize supporter actions based on client characteristics?
- Design: Based on initial analysis, develop reinforcement learning models to recommend optimal supporter review timing and language based on client characteristics.
- Aim is to improve client experiences and in turn, decrease early program dropout and disengagement.

Industry Perspectives Panel: Moderator: HSI Advisory Board Member, Rebecca Schechter

Panelists: Emily Lindemer, Morgan Health; Adam Powell, Payer+Provider; Debra Wein, Wellness Workdays. **Moderator**: Rebecca Schechter, HSI Advisory Board member

- Emerging trends post-COVID
    - o Employers view worker wellbeing as something that must be addressed, not a "nice to have"
    - o Mental health care has to be offered in a substantive and effective way
    - o Wellness programs are more than just a tech solution, though they need to use tech effectively
    - o Platform consolidation is needed: employers have "point solution fatigue"
- What works?
    - o Need to have a strategic approach and restructure the workplace, for example to improve safety [?]
    - o No "random acts of pilots"
    - o To measure impact look at utilization – number of visits that are in-patient, out-patient, emergency department
    - o Financial incentives "can" work
    - o Employers should think about the cost of not implementing wellness programs. Make sure not to treat employees as one big group but understand that different groups have different needs and incentives.
    - o The CEO saying a program is important is not enough. Managers and supervisors have to be okay with people taking part [during work hours] and prioritizing taking care of their health.
- Emerging technologies

- o For jobs like warehouse workers – wearable sensors to understand how the body is challenged so the workplace can be redesigned to mitigate stress and injury
  - o Companies are emerging that can offer data that gives a 360-degree view of employees. Currently the market that services healthcare data to employers is dismal.
  - o Look at root causes. Physician burnout from having to enter data into electronic health systems. An outside company can do that, so physicians can focus on their core competency.
- Final thoughts in three words?
  - o Build good environments
  - o Think about subpopulations
  - o Wellness is personal