Utilization of digital prenatal services by medical, mental health and social risk-factors

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BACKGROUND

Mental health and social needs are critical drivers of poor pregnancy outcomes.

In particular, pregnancy related anxiety has been tied to preterm birth, postpartum depression, and negative effects on infant development.

Yet, prenatal care traditionally focuses only on medical care, including management of chronic conditions and detection of pregnancy complications, providing limited screening and management of other critical determinants of health like mental health and social needs.

Digital health is uniquely positioned to fill gaps in traditional prenatal care through providing flexible wraparound services not limited by time or space.

RESEARCH OBJECTIVE

To identify gaps in traditional prenatal care delivery, we describe how pregnant patients' digital service utilization differs by risk factors in a digital program that supplements routine prenatal care.

STUDY DESIGN

Study type: Retrospective cohort study

Population: 3,434 users of an employer-sponsored digital women's and family health program who completed onboarding and transition assessments

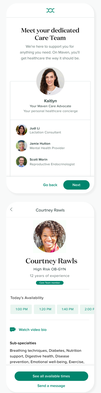
Population characteristics:

- Self-reported demographic characteristics
- Risk-factors collected through user assessments
  - **Medical risk-factors:** chronic conditions, pregnancy complications
  - **Mental health risk-factors:** depression, anxiety
  - **Social risk-factors:** pregnancy-related anxiety/social vulnerability (measured by the CDC's Social Vulnerability Index)

Primary outcome: Digital prenatal service utilization

1. Article reads
2. Messages sent to providers
3. Provider appointments

Analysis: Basic descriptive statistics and negative binomial regressions assessed key predictors of utilization.



PRINCIPAL FINDINGS

Figure 1: Demographic characteristics of included users

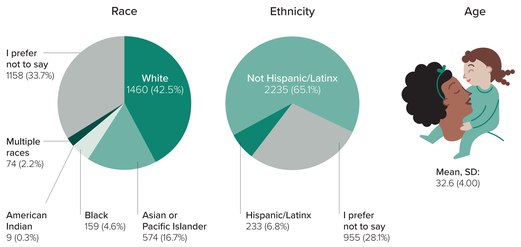


Figure 2: Users' medical, mental health, and social risk factors

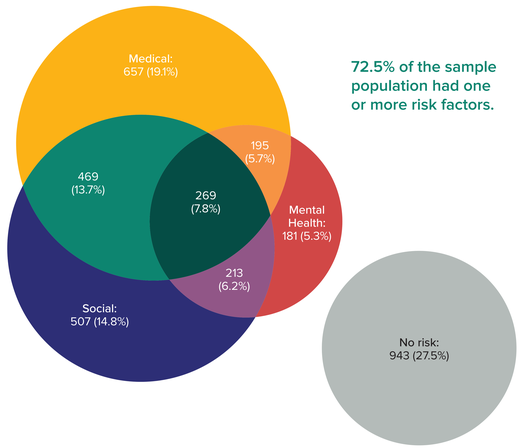
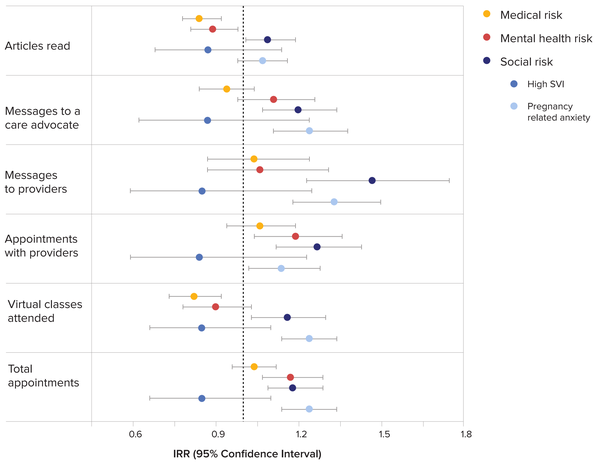


Table 1: Digital resource utilization during pregnancy by risk group

	Asynchronous	Interactions with a care advocate	Interactions with providers			Total appointments
	Article reads [3]	Messages to a care advocate [3]	Messages to providers [3]	Appointments with providers [3]	Virtual classes attended [3]	Total appointments [3]
Medical risk [1]	0.84 (0.78, 0.92)	0.94 (0.84, 1.04)	1.04 (0.87, 1.24)	1.06 (0.94, 1.19)	0.82 (0.73, 0.92)	1.04 (0.96, 1.12)
Mental health risk [1]	0.89 (0.81, 0.98)	1.11 (0.98, 1.26)	1.06 (0.87, 1.31)	1.19 (1.04, 1.36)	0.90 (0.78, 1.03)	1.17 (1.07, 1.29)
Social risk [1]	1.09 (1.01, 1.19)	1.20 (1.07, 1.34)	1.47 (1.23, 1.75)	1.27 (1.12, 1.43)	1.16 (1.03, 1.30)	1.18 (1.09, 1.29)
High SVI [2]	0.87 (0.68, 1.14)	0.87 (0.62, 1.24)	0.85 (0.59, 1.25)	0.84 (0.59, 1.23)	0.85 (0.66, 1.10)	0.85 (0.66, 1.10)
Pregnancy related anxiety [2]	1.07 (0.98, 1.16)	1.24 (1.11, 1.38)	1.33 (1.18, 1.50)	1.14 (1.02, 1.28)	1.24 (1.14, 1.34)	1.24 (1.14, 1.34)

[1] These models included each type of risk (medical, mental health, SDOH)
[2] These were run separately in a model with only high SVI and pregnancy-related anxiety
[3] Incidence Rate Ratio (95% Confidence Interval)

Figure 3: Digital resource utilization during pregnancy by risk group



CONCLUSIONS

Pregnant patients with mental health and social risk-factors are more likely to use digital prenatal services in addition to their brick and mortar maternity care.

Pregnancy related anxiety was a key driver of utilization of digital prenatal services, demonstrating gaps in existing services available to these patients.

Service utilization was lower for users in areas with high social vulnerability, suggesting barriers to digital care even when the cost of services is removed.

Future research is needed to help guide patients to the highest value services that best address their needs and preferences comprehensively in pregnancy and beyond.

RESEARCH FUNDERS

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