

Hearsay: A Storytelling Card Game to Increase Knowledge and Awareness of Contraception and Pre-Exposure Prophylaxis (PrEP) among High School Students

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BACKGROUND

- There is a need for innovative, scalable ways to educate adolescents about contraception and pre-exposure prophylaxis (PrEP).
- The use of game-based interventions for health education for youth have ample precedent and apparent promise.^{1,2}
- Games are feasible, acceptable, and enjoyable ways to explore health and social issues, and have been shown to be effective for communicating messages about health conditions and concerns, including STIs and contraception, tobacco use, and meningitis vaccination.¹⁻³
- Games are a powerful tool to engage adolescents to communicate knowledge on contraception and PrEP, and to model healthy, prosocial behaviors.⁴

OBJECTIVES

This study examines whether Hearsay, a story-telling card game, plus a curriculum are feasible, acceptable, usable, and whether they shift contraception and PrEP knowledge, attitudes, and behavioral intentions among adolescents.

METHODS

Game Design: Hearsay is a collaborative storytelling card game that seeks to normalize conversations about contraception and safer sex (condom and PrEP use). Hearsay was co-designed with adolescents during a three-week summer program. Game cards introduce information about contraception and PrEP, and players discuss relationships, emotions, and social networks. In Hearsay, players use cards



with characters, actions, emotions and relationships to tell a collaborative story about the first year of college, winning points by including special game cards on sexual and reproductive health topics including contraception, condoms, and PrEP. The game includes cards on the patch, the pill, the ring, IUDs, abstinence, condoms, and PrEP. A corresponding curriculum is administered by educators and includes an educational activity about contraception, a competitive quiz, and a discussion of a contraception negotiation scenario.

Study Design: During the summer of 2019, 44 high-school age young people (13-18 years) participated in a game-based learning program. At the start of the day, young people completed a pre-test on contraception and PrEP knowledge, contraception motivation, and communication with sexual partners. Participants were divided into groups of 5 and played Hearsay for 90 minutes and an accompanying curriculum was delivered by Chicago teachers. Immediately post-intervention, a post-test measured game feasibility, usability and acceptability, as well as contraception and PrEP knowledge, contraception motivation, and communication with sexual partners. The same post-test was administered at the 4-month follow-up.

Statistical Analyses: Wilcoxon signed-rank sum tests were used on continuous variables as data did not meet normality assumptions; McNemar's test was used for paired binary variables.

RESULTS

Table 1. Baseline demographic characteristics of participants

Demographic characteristic	N=44	%
Age (median)	15	-
Male	22	50.0%
Non-Hispanic Black/African American	29	65.9%
9 th Grade	23	52.3%

Feasibility, usability and acceptability scores were high:

- The majority of participants reported that they did not find the game difficult to play (90.9%), and that they enjoyed using storytelling (79.5%).
- The majority of participants (93.2%) rated the overall game experience as "good", "very good", or "excellent".

Table 2. Univariate analysis of pre-test and immediate post-test scores

Measure	Pre-Test Score	Post-Test Score	p value
Contraception knowledge	6.61	10.48	.000001*
Birth control motivation	2.67	2.38	.001*
Negative birth control attitudes	2.67	2.38	.0003*
Importance of talking about sexual health with a partner	3.67	3.77	.0009*
Percentage of participants who correctly answered PrEP question	11.6%	56.8%	.00003*

Gameplay was associated with:

- Significant increases in **contraception knowledge, birth control motivation, PrEP knowledge and a decrease in negative birth control attitudes ($p>.05$).**
- A significant increase in **partner sexual reproductive health communication** attitudes from pre-test to post-test ($p>.05$), as well as perceptions of the importance of talking about sexual health with a partner ($p>.05$).

At four months post follow up (n=43), gameplay was associated with:

- Significant increases in **contraception knowledge** (pre-test median=2, 4 month median=4, $p>.05$ n=).
- A significant increase in **PrEP knowledge** with 36.4% of participants correctly answering the true/false item at four month follow-up, compared to 11% at pre-test ($p>.05$).



KEY FINDINGS

- High feasibility and acceptability scores suggest that a Hearsay and its accompanying curriculum is an enjoyable method of learning among 13-18 year olds.
- A card-based storytelling game and accompanying curriculum is a promising method to promote sustained contraceptive knowledge, PrEP awareness, and contraceptive motivation among adolescents.
- Given the relatively limited exposure of the participants to the intervention and the sustained increases in contraception knowledge, Hearsay represents a novel yet feasible approach to engaging adolescents in a variety of settings.

LIMITATIONS

- Small sample size (n=44) limits the generalizability of findings.
- The study measures outcomes relevant to knowledge and attitudes towards contraception and PrEP. Further research is necessary to explore the impact of Hearsay and game-based learning on behavioral outcomes such as contraception use.

CONCLUSIONS

- Game-based learning programs have the potential to engage adolescents in sexual and reproductive health and promote sustained increases in contraception knowledge and PrEP knowledge.
- Further research is needed to understand the impact of the intervention on health behavior outcomes such as contraception use.

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