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Hormonal Male Contraception: Formative Research to Develop and Test Communication Messaging

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Abstract

Male-controlled contraception is limited, yet a promising hormonal male contraceptive (HMC) development in may increase options for men to share in the work of pregnancy prevention. This study examined college-aged (18–26 years) men's and women's perceptions of influential marketing strategy for an experimental novel HMC method, a transdermal gel. Six focus groups ($n = 29$) were conducted to glean insights for ad prototype creation. Ad prototypes were designed and then tested in semi-structured interviews ($n = 20$) to understand whether the messages were adequately representing the attributes intended while also allowing participants to contribute insights on improving appeal. A constant comparative approach was used for data contextualization and theme identification. Results provided a foundation for the creation of HMC message prototypes, aimed at increasing knowledge and uptake of a novel family planning method for men. Representation of a relatable character, or drawing on authentic experiences, aligned best with participant values. Focus groups illuminated salient concepts for HMC marketing, including humor, destigmatization, information, and credibility. Interview message testing yielded an understanding of elements participants responded most strongly to, including (1) ad sentiment and (2) trustworthiness. Findings provide a basis for understanding the placement of a potential marketing campaign to effectively frame HMC uptake as easy to use, safe, and popular while building on peer norms and group acceptability among a college-aged demographic. Healthcare providers and other practitioners can utilize these findings while engaging in family planning conversations, interventions, and message development.

Keywords

men's health, reproductive health, health promotion, consumer behavior, marketing

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Introduction

In October 2018, a novel reversible hormonal male contraceptive (HMC) gel entered Phase 2 clinical trials (NICHD, 2021; NIH, 2018), a promising development that may soon impact the lives of reproductive-aged men and women. Until the mid-to-late-2010s, male-controlled contraceptive options had not seen significant developments for over a century, limiting available methods to the male condom and vasectomy (Lloyd & Waterfield, 2016). Advances in the last 5 years (Anawalt et al., 2019; Behre et al., 2016; Wang et al., 2016) suggest HMC as a prospective pregnancy prevention tool. With approximately half of all pregnancies in the United States reported as unintended (Guttmacher Institute, 2019), and

despite innovations in the accessibility of hormonal female contraceptive (HFC) methods, alternative developments, such as male-controlled options, must continue to be explored.

Despite extensive research and developments (Anawalt et al., 2019; Kuo, 2010; Mullin, 2018; NICHD,

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2021; Nieschlag & Henke, 2005; Roth et al., 2014; Surampudi et al., 2014), barriers to HMC persist; side effect concerns, biological difficulties in the efficacy of sperm suppression, and cost/benefit debates all contribute to HMC delays. Funding is limited as the potential risks of HMC (i.e., efficacy, side effects, and litigation concerns) are perceived as outweighing benefits, even with potential positive outcomes (Anthes, 2017). Furthermore, when compared with existing HFC options, the payoff for investing in HMC remains in question (Lissner, 2017). This demonstrates a need to explore marketability to understand the costs, benefits, and consumer needs.

Existing Attitudes and Perceptions Toward HMC

Men. Understanding existing attitudes and perceptions toward the prospect of HMC also offers insight into barriers and facilitators to uptake, by incorporating target market perspectives. Prior literature (Glasier, 2010; Heinemann et al., 2005; Mullin, 2018) suggests men exhibit a general willingness to assume contraceptive responsibility, if available, given its proposed effectiveness in pregnancy prevention and increased comfort in having backup protection (Glasier, 2010). Shifts in contraceptive responsibility (Dismore et al., 2016; Lloyd & Waterfield, 2016; Sax et al., 2019), increased opportunities for reproductive autonomy (Dismore et al., 2016; Walker, 2011), and potential distrust of casual female partners (Glasier et al., 2000; Lloyd & Waterfield, 2016) have all been cited as reasons for male acceptability of HMC. Preference for male condoms, the inability to protect against sexually transmitted infections (STIs; Walker, 2011), and side effect concerns (Dismore et al., 2016) contribute to HMC resistance.

Women. Partner influence in contraceptive choice is important, as men's perceptions of female contraceptive behaviors have been shown to affect decision-making (Dudgeon & Inhorn, 2004; George et al., 2019). Understanding the potential female influence on HMC decision-making among men and incorporating this in messaging strategy may also enhance HMC messaging efficacy and adoption. Women's attitudes toward HMC are generally positive; however, many express concern surrounding a male partner's ability to employ perfect use (Eberhardt et al., 2009; Marcell et al., 2005) and men disregarding male condom use, leading to STI increases (Dismore et al., 2016). Extant literature shows a public interest in HMC, warranting the need to prioritize market research as that potential grows nearer.

HMC Promotion Considerations

Marketing must address HMC perceptions from both male and female perspectives, especially within the college-aged demographic, as unintended pregnancies are common and can potentially contribute to delaying or derailing educational plans. Among college men, knowledge about existing contraception is limited (Borrero et al., 2013; George et al., 2019; Gollub et al., 2020), despite men citing fear of unintended pregnancy as motivation for prevention (Gollub et al., 2020). This presents an opportunity to assess contraceptive misconceptions and understand attitudes before a male option is available to inform an effective messaging strategy. HMC remains, essentially, a novel product, indicating additional strategic measures must be taken to effectively promote HMC uptake. Investigating the perspectives and interest of a novel health product like HMC (Truong & Dang, 2017) coupled with formative market research methodologies (Truong & Dang, 2017), may be well-positioned to inform the effective promotion and uptake of HMC.

The current study consists of two phases, aimed first at developing ad prototypes via focus groups, followed by testing these prototypes via individual in-depth interviews. This combination of methodologies allowed for the collection of interpretations emerging in group and individual settings surrounding existing male contraceptive methods, prospective HMC options, and HMC marketing strategy recommendations. Purdue University's institutional review board approved the study (IRB-2019-384). The Methods and Results are organized by phase.

Method: Phase I

Researchers followed recommendations in past methodological literature regarding the number of focus groups necessary for explanatory power to achieve theoretical saturation (Carlsen & Glenton, 2011; Guest et al., 2017). A review examining focus group sampling found that approximately 80% of themes are discovered within the first two to three focus groups and 90% were discovered between three and six focus groups (Guest et al., 2017). Participants for male focus groups were recruited via targeted e-mail communication, filtered to only include male undergraduate students, and aged 18 to 26, who attended the university at the time of the study. The recruitment email discussed the study purpose and focus group schedule process, including locations and duration. Participant availability during one of the three provided times served as an additional eligibility criterion. Due to negative feedback from a handful of male students disagreeing with the study's focus on male contraception, in-person recruitment was employed moving forward

Table 1. Focus Group Protocol.

Tell me about what you have heard about new hormonal male birth control options, if anything? (There is currently a transdermal gel undergoing clinical trials, you may have seen articles for it on Facebook, Twitter, etc. Other clinical trials that have occurred in the past included possibilities of an injection and a pill.)

I am going to pass out the article about the current method being tested and a sheet of paper with questions. I'll allow you about 5 min to look it over and answer the questions.

QUESTIONS ON HANDOUT

What do you think about this? What are your immediate thoughts?

Would you consider using such a product? Why or why not?

What would prevent you from using such a product?

What would encourage you to use it?

Take some time to think about this and write down your responses and we will share our insights with everyone after about 5 min. (After 5 min, ask the questions that were on the handout to the larger group, use whiteboard/chart paper to record insights as participants share)

The last few things I'd like to discuss with you all have to do with media and advertising. These questions deal with how you prefer to receive information about new products, and what strategies are most successful at getting your attention.

With the presence of social media and other instant forms of communication, we are constantly bombarded with advertisements, all fighting for our attention. What kinds of advertisements are usually successful at getting your attention?

Probe: What makes you notice a specific advertisement among the thousands you encounter every day?

Probe: Does where the information is coming from matter to you (i.e., social media ads, TV commercials, and billboards)?

Now, I am going to handout a question sheet and ask you to get into pairs and discuss the questions with your partner. Please use the pen and paper provided to write down what you discuss. I will give you about 5 min to do this. (After 5 min, ask the questions that were on the handout to the larger group, use whiteboard/chart paper to record insights as participants share)

QUESTIONS ON HANDOUT

What would you like to see in an advertisement about a new male birth control method?

What would an advertisement have to include in order to get your attention about the product?

What messages would interest you?

What about imagery?

with the female-only focus groups. This allowed the first author to provide adequate information and clarify any questions surrounding study scope and intent. In-person recruitment occurred via communication with leaders and executive members of university-sponsored organizations, such as fraternities, sororities, cultural centers, and health-related clubs, where the first author requested time to recruit participants at organized group meetings. Written informed consent was collected from participants before initiating focus group discussions. Upon focus group completion, participants completed a brief demographic survey. Focus groups continued until theoretical saturation was reached (Corbin & Strauss, 2008; Guest et al., 2017), meaning all information for each question had emerged among the focus groups held, so that any additional data collected reinforced emergent categories, rather than provide new information.

The first author and assistant, both female, third-year PhD candidates at the time of the study with training in qualitative methodology, led the male and female focus groups, which were audio-recorded, ranging from 45 to 120 min (76.72 ± 27.81). The first author served as the moderator, driving the discussion, while the assistant observed, recorded, and managed tasks. Participants did not receive a monetary incentive, but refreshments (i.e., pizza and soft drinks) were provided. The semi-structured

focus group protocol allowed for flexibility in adding, editing, or modifying question order (Rubin & Rubin, 2012). This methodology also permitted participants to introduce new, relevant concepts organically throughout the conversation. Each discussion began by asking participants about their experiences with and knowledge of existing male contraceptive methods. Participants read a brief news article in conjunction with this series of questions, detailing an experimental HMC method, a transdermal gel (Anawalt et al., 2019; NICHD, 2021), and shared immediate thoughts. Finally, participants provided recommendations surrounding effective messaging strategy. Table 1 details the specific questions asked during the current study. About 75% of the focus group discussion duration was focused on the latter two points, as these data were used to design the ad prototypes tested in Phase 2.

Data Analysis

Focus group audio was transcribed verbatim, and content analysis was conducted within and across transcripts. A constant comparison approach was used, allowing for interpretation from within-participant words, phrases, and overall narratives. HyperRESEARCH 4.0.1., a qualitative data management program, facilitated data organization and management. A codebook was developed

Table 2. Participant Demographics.

Demographic Categories	(n = 49)
	M/Prop.
Age	21.61 ± 1.78
Sex	
Female	20 (40.82%)
Male	29 (59.18%)
Race/Ethnicity	
White	42 (85.71%)
Black	3 (6.12%)
Hispanic/Latino	1 (2.04%)
Asian/Pacific Islander	2 (4.00%)
Middle Eastern/North African	1 (2.04%)
Sexual orientation	
Heterosexual	43 (87.76%)
Bisexual	6 (12.24%)
Relationship status	
In an exclusive/monogamous relationship	22 (44.89%)
Sexually active, but do not consider it a relationship	13 (26.53%)
Not currently sexually active with another person	11 (22.45%)
Have never been sexually active with another person	3 (6.12%)
Primary contraceptive method ^a	
Male condom	19 (38.78%)
Hormonal female contraception	18 (36.73%)
Withdrawal	7 (14.29%)
None	2 (4.08%)

Note. Results represented as $M \pm SD$ or n (%).

^aValues that do not add to sample total indicate missing data.

based on the focus group guide, initial reading results, and existing literature consisting of keywords and phrases extracted from participant narratives for data organization. Through open coding, keywords and phrases were included in the codebook and attached to transcript sections based on their content (Deterding & Waters, 2018). Initial data impressions were refined, and axial coding began, allowing codes and categories to be compared with overarching concepts to contextualize the data and identify themes. This process was repeated for all focus group transcripts.

Results: Phase I

Overall, 3 male-only and 3 female-only focus groups with college-aged participants (female: $n = 13$; male: $n = 16$) were conducted. Message development results are presented below. Quotes are marked with MFG or FFG to indicate insights shared in either the male or the female focus groups, respectively. Participant demographic information is shown in Table 2.

After exposure to the HMC gel example, focus group discussions surrounded perceptions of marketing and

messaging strategy for the product. Four themes emerged suggesting the most salient concepts for participants were as follows: (1) information, (2) destigmatization, (3) humor, and (4) credibility.

Information: Learning About HMC. Participants emphasized the importance of information within a marketing message, suggesting information as a gateway for discussion: "I think information is really good . . . you can talk [about HMC] with your friends or your doctor. Because it's new, you want to have any information about it" (MFG). Participants also discussed the importance of straightforward, simple, honest messages: "[most ads] are cheesy. I wouldn't want a couple being like, 'it worked for us.' I just want a picture of [the HMC method] saying, 'hey, here it is. FDA approved. It works.' Cool. Let's go" (MFG). A female participant commented on the importance of information over sentiment messages (i.e., humor): "[an HMC ad] probably doesn't have to be as funny, as [it is] informative to get the word out" (FFG). Another participant supported this: "I think you have to catch attention, but my eyes would look for . . . clinically proven, tested, works this amount of the time" (FFG). Female participants also shared ideas of effectively getting ahead of potential side effect concerns among men via informational messaging: "[an HMC message should] reaffirm [to men] that the testosterone won't affect your muscles, you won't get emotional, don't worry" (FFG). Another female participant suggested that while the novelty of a potential HMC method may be enough to spark interest, information was still key:

Honestly, [HMC ads need] to talk about what it is. Because it's so new, the product itself is enough for me to be curious about it. So, I would want to [read information] about it [being] the only [male birth control] offered right now and it works. (FFG)

Thus, an informational, straightforward messaging strategy may counteract hesitation and circumvent side effect/efficacy concerns.

Destigmatize: Normalizing HMC. Participants felt that messages focused on normalizing male birth control may contribute to destigmatizing its use: "I definitely think . . . the biggest thing is gonna be normalizing [HMC in ads] because it's so new and something that guys are not used to" (MFG). A female participant also weighed in: "I think normalizing [HMC is important]. Sex is normal and healthy. So, saying, 'this doesn't make you less of a man, its provides an extra something to protect you' [might work]" (FFG). Some female participants conceptualized destigmatization as valuing representations of real experiences. One female participant offered an example: "[the

message should be] something relatable. Like, ‘scared that your condom broke?’ I think most people would say, ‘yeah that happened to me!’” (FFG). Another female participant agreed:

I think of tampon commercials, the happy girl on the beach saying, ‘I don’t have my period!’ It’s kind of off-putting, it seems like it’s trying to be what the experience is not. I would be more drawn to something genuine, honest, real. . . like the person pitching it cares about how it affects consumers. (FFG)

By highlighting the consequences of marketing messages that downplay human experiences, this participant stressed the importance of representing honest experiences in relatable messaging. Other female participants suggested normalizing messages may “encourage [HMC] as a smart choice, the smart thing to do” (FFG). Another supported this, stating, “[an HMC message should] project that it’s enabling you to have more fun and be responsible” (FFG). Representing destigmatization as a smart choice appeared to appeal to female participant values, resulting in normalized feelings toward the message, and subsequently, the product.

Humor: Captivating a Younger Audience. Humor was described as an effective method in similar products (i.e., male condoms), with some participants suggesting this could translate to HMC. One male participant offered one example: “have you guys seen the newer Trojan commercials? They’re f**king funny. He’s holding a banana [and putting the condom on it] that’s just funny to me, it’s silly. [An HMC ad] needs to be along those lines” (MFG). A female participant agreed with this, referencing the same male condom brand appealing to the target audience through humor: “[HMC ads should be] oriented toward a younger crowd because sex is more fluid . . . the Trojan condom ads are funny now, it gets the attention of younger people” (FFG).

Participants did note instilling product trust and brand recognition were necessary prerequisites to releasing a humorous HMC prototype, which was why they felt ads by the trusted condom brand were effective: “I literally trust Trojan with my life. . . just having that brand recognition, you see that name and think, ‘hey that must work’” (MFG). A female participant agreed, insinuating humorous message efficacy was contingent on brand trust: “if [HMC] just jumped in right away. . . [it would not] work. Trojan commercials are funny, but you know [the brand], right? They can be funny because they have global recognition and trust built” (FFG). While most participants felt humor was effective, some suggested a combination of serious and humorous messages may better suit HMC promotion, due to its novelty: “I think it should have a

maturity value. It should open with some humor and go into something a little bit more serious” (FFG). Thus, these participants felt leveraging humor, combined with an element of trust, may provide a unique HMC messaging opportunity.

Credibility: Reputable Sources Matter. Participants considered credibility a necessary component of HMC messaging, building upon the discussion of trust mentioned in the aforementioned theme. A male participant explained, “I feel like [whether you pay attention to] a product is based on . . . credibility, not too many ads are actually good, but if it’s credible. . . you might be more likely to look at it” (MFG). Primarily among men, the association of a product with a “legitimate entity” contributed to credibility: “[if the ad] said ‘consult your primary physician’ . . . a credible source really helps, it’s trustworthy” (MFG). Legitimate sources were also discussed as regulated or trustworthy HMC informants: “if it was a [sales] rep . . . like a dude walking around campus that was like ‘hey, I’m here to talk about this’ . . . I would know it’s real” (MFG).

Interestingly, while men cited legitimate sources as physicians and sales representatives, women felt that men would be most influenced by celebrity endorsements and view them as credible: “if you have a well-known celebrity in the male world, that would help credibility” (FFG). Another female participant specified, “someone like the Rock. . . a celebrity endorsement of someone masculine” (FFG). Male participants directly opposed this: “P1: Yeah, I don’t care about celebrities or athletes. Or at least guys don’t. P2: Yeah, guys don’t give a s**t. P3: I don’t really care what you’re advertising, put points on the board. That’s your job” (MFG). Though representing credibility was important for both men and women, the definition of credible, legitimate sources differed across genders.

Method: Phase 2

The first author identified specific themes found within the focus group data via content analysis and then broke them down into the attributes (Table 3), following interpretation by the research team. Ad prototypes were then designed on Canva, an online graphic design software. The ad prototypes reflected either an informational or colloquial message and were combined with attributes gleaned from focus group insights relating to either message/image relatability (e.g., aspirational or realistic), sentiment (e.g., serious or humorous), or perceived credibility (e.g., image of a doctor vs. other image). This allowed the researchers to test appeal based on these attributes. Furthermore, participants were asked to rate how

Table 3. Prototype Attribute Matrix.

Attribute dimensions	Attribute levels	
	Option 1	Option 2
Message strategy	Informational	Colloquial
Message/image relatability	Aspirational	Relatable
Message/image sentiment	Serious	Humorous
Perceived credibility	Image of Doctor	Other image

informational/realistic/serious/ humorous they perceived each message to be, on a scale of 1 to 10. Participants were then prompted to explain their rating choices to understand whether the messages were adequately representing the attributes intended, while also allowing participants to contribute opportunities for improvement. Following feedback from interviews, ad prototypes were edited to reflect interview data and were used in a later quantitative study.

Semi-structured interviews followed the completion of the initial focus group study. Prior studies show the impact sexual partners, particularly men, have on contraception use (Cox et al., 2010); thus, female partners may have a similar impact on male contraception habits due to the higher likelihood of both partners participating in the selection on contraceptive methods used (Heinemann et al., 2005). Therefore, both male and female perspectives of the prototype messaging were considered.

Participants were recruited via in-person presentations and snowball sampling, using e-mail communication if necessary (i.e., follow-up or requested communication). Similar to female-only focus groups, in-person recruitment occurred via communication with leaders of university-sponsored organizations, where the first author solicited participation at organized meetings. Interested participants scheduled their interviews after the brief talk. Each interview lasted from 45 to 60 min (51.73 ± 10.28). The first author conducted all interviews at a time and place convenient to each participant. Written informed consent was collected from participants before initiating interviews. Upon completion of the interview, participants completed a brief demographic survey and received a US\$25.00 Amazon gift card. Interviews continued until theoretical saturation was reached (Corbin & Strauss, 2008; Guest et al., 2006).

The semi-structured interview protocol allowed for flexibility in moving through question order to encourage organic introduction to relevant concepts (Rubin & Rubin, 2012). To assess consistency across group and individual insights, the interview inquired into similar topics as the focus groups. In addition, the interviews included a message testing component, where a series of message prototypes, designed based on focus group data, were displayed for response evaluation.

Data Analysis

Phase 2 data were analyzed similarly to Phase 1 data. Interview audio was transcribed verbatim, content analysis was conducted, and HyperRESEARCH 4.0.1. facilitated data organization and management. A codebook was developed based on the interview guide, initial reading, and existing literature. For interview transcripts, codes to sort data from the message testing component by prototype (i.e., ratings, requested modifications) were included. Open and axial coding were conducted, and themes were identified. Prototype ratings (Table 4) from the interview message testing component were also reported, offering means and medians for each attribute rating.

Results: Phase 2

Overall 20 college-aged participants (female: $n = 7$; male: $n = 13$) completed interviews. Message testing results are presented below, with FI or MI noting female or male individual interviews. Focus group findings from Phase 1 informed the design of the prototypes used in the message testing component (Figure 1). In the analysis, themes emerged related to the elements participants responded most strongly to (1) sentiment and (2) trustworthiness.

Sentiment: Emotional Responses to Messages. Participants responded to message and imagery sentiments, attributing these to how the ads would make them feel about a potential HMC product. As ads 1 (humorous) and 2 (serious) represented opposite responses to unintended pregnancy, participants evaluated the sentiments they preferred to see in that situation. One male participant commented on the humorous ad, stating this approach may negatively alter his view: “[I would view HMC] a bit negatively [because the ad] is trying to catch your attention with shock value, but it’s not something I associate with a medical product” (MI; Ad 1). A female participant agreed, suggesting, “a more serious route [may be more effective for HMC] because unintended pregnancy would be upsetting for both partners” (FI; Ad 1). A male participant echoed this: “I feel like [the serious ad] would play

Table 4. Prototype Ratings.

Ad	Attribute	(n = 20)	
		M/Prop.	Median
Ad 1	Informational	2.90	2.00
	Realistic	5.15	5.00
	Humorous	7.85	8.00
	Credible	3.50	3.50
Ad 2	Informational	3.95	4.50
	Realistic	7.20	7.50
	Humorous	1.20	1.00
	Credible	5.65	6.00
Ad 3	Informational	5.45	6.00
	Realistic	7.45	8.00
	Humorous	2.95	2.50
	Credible	6.30	7.00
Ad 4	Informational	4.80	4.50
	Realistic	7.55	8.00
	Humorous	3.35	4.00
	Credible	5.90	7.00
Ad 5	Informational	9.00	9.00
	Realistic	8.10	8.00
	Humorous	1.20	1.00
	Credible	8.75	9.00
Ad 6	Informational	4.15	4.00
	Realistic	6.60	6.50
	Humorous	1.75	1.00
	Credible	6.65	7.00



Figure 1. Ad Prototypes.

on my emotions better because this is how I would feel. Not good, not light-hearted" (MI; Ad 2). Contrary to some perceptions from focus groups, the humorous sentiment was not received well, confirming participants' sentiments about brand recognition and suggesting in this context, displaying genuine experiences on ads may be more effective.

Trustworthiness: Character Credibility and Relatability. Dimensions of trust and trustworthiness emerged in participants' prototype evaluations, particularly in the discussion of Ads 5 and 6, both containing images of a doctor. Aligning with credibility conversations in focus groups, most participants favored Ad 5, referring to the doctor image increasing credibility and trust: "I [like that this] gives off credibility. Having a doctor. . . [shows they're] prescribing it or telling you to use it, so it's effective" (MI; Ad 5). A female participant also alluded to perceived trust in doctors as credible figures: "people usually trust doctors. So, in an audience where there's concern of unwanted pregnancy, [this might be effective]" (FI; Ad 5). Even when acknowledging doctors on ads may not be actual doctors, participants still felt this imagery contributed to credibility: "[this ad shows HMC] is something tested by doctors, adding the doctor to it, whether he's an actor or not, he likely is, it just makes it seem more credible" (MI; Ad 6). This suggests images of trustworthy characters, such as doctors, may instill feelings of trust in a potential HMC product.

Participants also mentioned informational messaging as an additional contributor to trustworthiness. A male participant expanded on this, suggesting the informational component of Ad 5 was most effective in instilling trust:

This ad is most effective because it relates to me and how serious I feel the problem is by portraying all the information. It uses that lingo, so I feel that it's something that's been approved by the FDA. . . everything feels right. (MI; Ad 5)

Trustworthiness was conceptualized by informational messaging, echoing insights from focus groups and indicating the importance of implementing this strategy in HMC marketing efforts. Participants responded most positively to the combination of both informational messaging and the doctor character in Ad 5, demonstrating these elements may work together to represent trustworthiness in an HMC ad.

Participants commented on the visual appeal of prototypes, with some preferring relatable or aspirational concepts, while others preferred the doctor image. One male participant expressed favorable views on Ad 3, alluding to the appeal of a relatable character: "[Ad 3] really caught me. I like the words, and I can relate to it. . . it just

appeals to me" (MI; Ad 3). A female participant commented on Ad 4, the aspirational ad, suggesting the imagery successfully contextualized a potential situation in which one might use HMC: "I think that picture is really good, I feel like it gives a good context of things [related to HMC]" (FI; Ad 4). Other participants echoed previous perspectives, favoring the doctor image because "it makes [the ad] seem more official, more professional. It's something you'd want to go talk to your doctor about" (MI; Ad 5).

Participants also offered suggestions for HMC message concepts, most commonly related to representations of how the product is used: "maybe a picture of a guy rubbing [the gel on], like their hand on their shoulder. I think a picture of him using the product [would be helpful]" (FI; Ad 3). A male participant further detailed this would increase appeal:

I like [Ad 3] because it tells you, "just add one more step to your routine." You get out of the shower, trim your beard, put on your moisturizer, do your hair. I just think [it should also show] putting the gel on your shoulders. (MI; Ad 3)

Thus, message concepts audiences feel they can relate to or trust, along with practical messaging or imagery meant to increase agency in use may be best represented by an impressionable character in an HMC ad. Figure 2 lays out the prototypes in order of most to least preferred by participants, along with the frequencies of those who felt positive, neutral, and negative sentiments toward each ad.

Discussion

This study utilized formative, audience-oriented research to generate HMC marketing messages acceptable for a college-aged population. Studies demonstrating the value of employing formative research to inform message development are limited (Martinez et al., 2012; Sundstrom et al., 2015), especially in the context of contraceptive and reproductive health products (Campo et al., 2013; Colarossi et al., 2010; DeMaria et al., 2017; Sundstrom et al., 2015, 2016). Using focus groups to gather initial insights, then creating prototypes, and testing them in follow-up interviews ensured participant narratives drove the research process, increasing reliability (Colarossi et al., 2010; Sundstrom et al., 2015). Understanding and applying consumer wants and needs is valuable to also instill trust, loyalty, and value co-creation.

Focus groups illuminated salient concepts for HMC marketing, including humor, destigmatization, information, and credibility—supporting past contraceptive promotion research (Campo et al., 2013; Colarossi et al., 2010; DeMaria et al., 2017; Sundstrom et al., 2015, 2016). Humor is often used with contraception, as most



Figure 2. Prototypes by Preference.

individuals are knowledgeable of its benefits (Campo et al., 2013). However, upon message creation and testing, the lightheartedness perpetuated by the humorous message was not well-received, indicating the use of this sentiment in the context of a novel contraceptive product may not be as effective, and suggesting a key strategy for HMC being developing trust and brand recognition before presenting humorous messages to enhance effectiveness. Normalization was well-accepted (DeMaria et al., 2017), further emphasizing the importance of representing real experiences in HMC messaging strategy. Message testing confirmed destigmatization as effective when represented as honest experiences, specifically focused on normalizing HMC and painting it as a “smart choice.” Destigmatizing messaging may work to counteract negative perceptions (i.e., difficulty accepting HMC, potential feelings of emasculation, and negative perceptions) by normalizing HMC use (e.g., making the behavior popular), and drawing on authentic experiences to better align with consumer values.

Participants felt informational messages offering credibility were most useful for promoting HMC, suggesting information on ads is compelling to consumers (Sundstrom

et al., 2015), while credibility can significantly impact uptake and correct use (Wagner et al., 2018). Participants reinforced this strategy, primarily referring to this combination as instilling trust in a potential HMC product. As credibility in ads is most influential when a recipient has little to no information about a product (Munnukka et al., 2016), understanding conceptualizations of credibility is crucial for novel product messaging. Credibility is often comprised of trustworthiness and expertise (Munnukka et al., 2016), as it provides reassurance to those who may be hesitant or fearful of adopting a new behavior. This supports participant narratives surrounding partiality toward the doctor image, as well as suggestions to present step-by-step use instructions. Combining informational messaging to increase agency in use with messaging concepts audiences feel they can relate to or trust may be effective for marketing HMC.

Implications for Marketing Practice

Despite the commercial unavailability of HMC, findings provide practical implications for health communication practice within the context of novel health products. The

example of HMC as a novel health product was well-positioned for the current study because, as it is not yet available, the baseline for past behavior or use is zero, eliminating bias from experiences or extensive preconceived notions. The data reflected raw perspectives of the target audience. For novel health products, the lack of prior knowledge and use experience elucidates the utility of infusing information and credibility messages in marketing strategy to better position the product as trustworthy among target consumers.

Our initial formative audience research findings uncovered the importance of prioritizing humor, information, destigmatization, and credibility when developing HMC messaging. However, as evidenced by message prototype design and testing, understanding message concepts alone may not be sufficient to ensure a successful campaign for HMC. Applying message concepts and testing among college-aged male and female audience segments revealed humor as ineffective without prior brand loyalty and recognition, while sentiment and trustworthiness emerged as additional integral elements contributing to successful HMC messaging. For similar novel health products or health behavior change efforts among the college-aged audience, marketing strategy should extend beyond testing message concepts and focus on testing concrete messages gleaned from initial formative research to enhance message efficacy.

Results also provided a baseline of health and social topics that would be critical to address when preparing a college-aged population for future HMC acceptance and uptake. Participants supported the idea of a potential male option, with men desiring contraceptive autonomy and women wanting to shoulder less of the contraceptive burden. Concerns about side effects, proper use, and safety were prominent, along with social issues like normalization and destigmatization. This further emphasizes the importance of education through health campaign efforts, not only to dispel health outcome myths but also to the social and cultural landscape among a college-aged audience.

Limitations and Future Research

Focus groups and interviews allowed participants to provide robust consumer insights related to the potential introduction of HMC. The iterative process of basing message concepts and designs on formative research, creating, and testing contributed to study reliability (Colarossi et al., 2010; Sundstrom et al., 2015). Findings provide applicable first steps for marketers to consider when promoting novel contraceptive products, such as HMC. However, study limitations exist. Due to the nature of qualitative research, generalizability to wider populations is limited. The sample also lacked racial/ethnic

diversity, as a majority of participants self-identified as White. Historically, communities of color were targeted in novel contraceptive testing (Kusunoki et al., 2016), which may affect how future messaging strategies are designed; thus, the lack of diversity is a limitation. Results around healthcare providers as a trustworthy source may have also varied depending on a participant's race/ethnicity, posing an additional limitation related to lack of sample diversity (Halbert et al., 2006). Despite emphasizing the importance of confidentiality in focus groups, the nature of focus groups poses a threat to open and honest sharing within the group, potentially introducing social desirability bias. In addition, the first author, who moderated the focus groups and conducted the interviews, is female, which may have influenced, particularly male participants, to offer more favorable responses. However, through rapport building, the first author reassured participants that their honest responses would be respected and kept confidential. Participants were also recruited in a university setting, resulting in a convenience sample. Despite these limitations, this study offers novel contributions to the contraceptive advertising and promotion research body, serving as the first empirical study incorporating consumer insights to design and test effective marketing messages to a novel male contraceptive product before its availability. Future research should test the utility of applying the current methodology to a novel health product other than HMC. Furthermore, future research should consider women's impact on male contraception use in addition to how male consumer habits may be impacted overall by their partners. Consumer insights surrounding preferred marketing strategy for a novel contraceptive product, like HMC, should also be examined outside of a university setting to better understand necessary consumer segmentation.

Conclusion

This study sought to understand college-aged men's and women's perceptions of effective marketing strategies for an experimental HMC method. Consumer insights provided a foundation for the creation of HMC message prototypes and message testing identified elements participants responded most strongly to. Representation of a relatable character, or drawing on authentic experiences, aligned best with consumer values. In addition, practical messaging or imagery may be an effective combination for marketing a novel contraceptive product. Findings provide a basis for understanding the placement of a potential marketing campaign to effectively frame HMC uptake as easy to use, safe, and popular while building on peer norms and group acceptability among a college-aged demographic. Healthcare providers and other

practitioners can utilize these findings when engaging in family planning conversations, interventions, and message development with patients and communities.

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Ethics Approval and Consent to Participate

This study was approved by the Purdue Institutional Review Board. All study participants provided written informed consent, including consent to be audio recorded.

Availability of Data and Materials

The data set used and analyzed for the current study is available from the corresponding author upon reasonable request.

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