DESIGNING FOR USABILITY: AN AI-HUMAN HYBRID MENTAL HEALTH COUNSELING WEB APP FOR STUDENTS

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ABSTRACT

The significant rise in demand for mental health support among students has strained counselors and psychologists' capacity to serve, necessitating innovative approaches that extend access for the students while reducing professional workload. AI is an increasingly explored technology to solve this issue. This research investigates and formulates the user experience of an AI-Human hybrid mental health counseling web app for students. A mixed-methods design was adopted. It consisted of in-depth interviews with students and mental health professionals to elicit user-centered insights, and an online survey using the Kano model and conjoint analysis to prioritize system features. Findings consistently highlight support for a hybrid human–AI model. Both students in higher education and mental health professionals recognized AI's potential as a complementary tool, particularly in reducing administrative tasks. Participants favored the use of AI for onboarding clients and collecting initial information, thereby enabling counselors to dedicate more time to meaningful dialogues. At the end of sessions, AI was also viewed as valuable in generating summaries and supporting post-session analysis. However, attitudes towards AI use during live counseling were more cautious. This research contributes conceptual and empirical foundations for the development of an AI-enhanced solution that preserves human connection while improving efficiency and quality of care.

Keywords: *Artificial Intelligence, Mental Health, User-Centered Design, Counseling, Human-Computer Interaction*

1. INTRODUCTION

Students, often referred to as "Transitional-age youth", face new challenges and new experiences such as financial and academic difficulties and loneliness [1]. In the same research, anxiety was found to be the most common mental health issue among students. It is clear that supporting their mental health is urgent.

Protective and supportive environments are important to support the mental health of young generation. It means access to mental health support must be easy and readily available. Unfortunately, public mental health services have limited capacity to handle the demand. Indonesia is not an exception to this problem. In Indonesia, 1 psychiatrist must serve 250,000 residents and 1 clinical psychologist must serve around 90,000 residents. This ratio is still far below the WHO standard which requires an ideal ratio of psychiatrists and clinical psychologists to the population of 1:30,000 [2].

This national burden is reflected in the challenges faced by emerging digital mental health providers, such as Indonesian mental health startup referred to as Startup XYZ in this research. Their platform connects users to counselors and psychologists and has self-care features such as journalling and meditation. Limited numbers of psychologists or counselors and affordable pricing are their primary challenges. On the other hand, users have voiced some complaints about the effectiveness and efficiency of counseling sessions.

Based on a 2023-2024 survey about which aspects failed to satisfy Business-to-Business (B2B) customers, the top three themes identified were duration or length of counseling session, quality of psychologists, and scheduling issues. Forty-one percent (41%) of the answers mentioned the duration or length of counseling session. For example, "the time is too short", "the counseling time is only 1 hour, not enough", and "60 minutes of counseling seems to be not enough." Then, 18.1% raised issues

of the quality of psychologists. The feedback highlighted issues related to professionalism, empathy, and understanding. For example, "a know-it-all psychologist who takes problems lightly", "a psychologist who doesn't understand", and "not very responsive". Finally, scheduling issues were frequently expressed (14.3%), with users voicing frustration over limited time slots, inflexibility, and long wait times, making it a critical area to address.

When asked for suggestions, 35% of the users preferred to attend more sessions as they felt one session was not enough. They wished for more time to pour out their feelings and a monitoring scheme to track their progress. Therefore, it is unsurprising that the second most suggested improvement, at 22%, was related to the duration or length of counseling session. The third most suggested improvement was related to the quality of psychologists. According to the users, it would be better if the psychologists could dig deeper into issues, provide comprehensive solutions, and explain behaviors or thoughts scientifically, while avoiding an overly textbook approach by balancing listening and offering advice. Additionally, psychologists' professionalism must be maintained through punctuality, preparedness before sessions, attentiveness in addressing issues, as well as clear session documentation and practical solutions. The psychologist-client matching system also needs improvement by offering selection options based on specialization, age, gender, and experience.

In the B2C reviews of the same period, most users expressed positive sentiment (96%), with only a small proportion of reviews showing neutral (3%) and negative sentiment (1%). Although the reviews are predominantly positive, neutral reviews from B2C users often highlight concerns about the duration and time management of counseling sessions. Users felt the sessions were too short, leaving them feeling rushed and unable to experience the full impact of the session. Among the negative reviews, the most common issue raised was that the counseling was unhelpful. In conclusion, based on user reviews the issues of session duration, psychologist quality, and scheduling are crucial to improve. On the other hand, improving the service will be difficult with the limited number of psychologists. Therefore, the feasible option is to increase the effectiveness and efficiency of counseling sessions with technology.

Recent advancements in artificial intelligence (AI) have triggered innovative approaches to mental health support. Existing literature suggests that digital mental health tools, especially AI-enhanced chatbots and virtual assistants, can improve accessibility, quality, and personalization of care [3], [4].

However, there are still concerns surrounding AI, such as bias [5], privacy risk, and over-reliance [6]. For mental health professionals, there is a concern about the potential of over-reliance on AI, which could erode clinicians' critical thinking and decision-making [5]. Despite the increasing amount of research and solutions proposed, we cannot apply or integrate them right away into existing systems. We should not mindlessly adopt Western-centric views of mental health and perpetuate the notion that one-sided computing solutions can have universal relevance, and risks erasing local context [7]. Current DMH tools often lack culturally grounded care.

Another important issue to address is engagement, which is the key to gain benefit from mental health interventions [8]. Despite being tech-savvy, among young people such as university students, the actual utilization of AI-driven chatbots remains low [9]. For digital mental health in general, dropout rate is a challenge [10]. A lack of perceived trustworthiness, irrelevancy due to perceived lack of cultural humility during research, and AI's ability to capture and converse with nuances are identified as some of barriers to engagement [11], [12], [13]. Furthermore, it is important to note that youth prefer convenient and easy to use mental health apps [14].

AI-powered mental health support might help with efficiency, but it must balance convenience, safety, and effects of interventions. Research recommends validation of HAI model, combining AI chatbots with human experts, in research, practice and policy to optimize mental health care assistance [15]. It even states that the human factors of human–computer interaction require more attention through empirical research. Therefore, this research focuses on how to design usable user experience for an AI-enhanced Mental Health Counseling system, specifically accommodating youth and mental health professionals in Indonesia. This article presents a focused analysis of one of the primary contributions from the first author's master's thesis research [16].

2. LITERATURE REVIEW

2.1 Human-Centered Design

To be adopted, a system must be tailored to the context of the people, considering their needs, goals, and challenges. This is the aim of human-centered design approach [17]. HCD is crucial when developing mental health apps, such as an AI-enhanced mental health counseling web app. By focusing on the user throughout the design process, the developer team gains a better understanding of the unique challenges and sensitivities related to mental health.

HCD framework has been developed by several organizations, one of them is IDEO [18], [19]. HCD begins with deep user insights gathering (Inspiration) to ensure solutions are grounded in real-world needs, then processing insights to craft innovative concepts (Ideation), and finally rapidly prototyping and refining solutions (Implementation).

In context of AI, there is a concept called Human-Centered Artificial Intelligence (HCAI). Several authors address how HCAI is defined, its core elements, and how it can be adopted [20]. HCAI applies HCD practices focusing on understanding purposes, human values, and desired AI traits in the creation of AI systems. It strives to increase human capabilities while keeping humans in control over AI systems, by considering AI system holistically (covering the needs, context, and ethical and legal conditions) as well as promoting individual and societal well-being.

HCAI systems are typically built using a core iterative process that keeps users involved at every stage: Understand, Design & Development, and Evaluation.

2.2 The Role of AI in Mental Health

Current applications of AI in various parts of healthcare have the potential to transform the field by making mental health care more accessible, effective, and data driven [21]. In treatment processes, AI can be leveraged as individualized treatment planner, virtual therapists and chatbots, therapy assistant, teletherapy enhancer, and continuous monitor tool. Research by Boucher et al. [22] found that chatbots were perceived as less judgmental compared to humans, which helps users to open up about themselves, and allows for more conversational flexibility. Furthermore, a preliminary evaluation reported that increased chatbot use resulted in lower post-intervention anxiety and depression scores [23].

However, low user engagement and significant dropout rates are major implementation challenges for digital mental health tools [8], [10]. A range of barriers has been identified, including balancing short-terms (e.g., engagements, immediate relief) and long-term results, ethical challenges related to privacy, data security, lack of adequate clinical validation, regulatory gaps, limited professional training, challenges in user-centered design, and algorithmic bias [5], [8], [11], [24], [25], [26], [27], [28], [29].

3. METHODOLOGY

This research adopted Human-Centered Design (HCD) framework and adapted with Human-Centered Artificial Intelligence (HCAI) principles which are specific to AI context. HCD fits the purpose of this research, because it highlights the importance of putting people at the center of the design process and understanding their needs and perspectives to create effective and meaningful [9].

We employed in-depth interviews and a qualitative survey to identify and prioritize AI features (Figure 1). The user testing or evaluation phase was not included due to time and resource constraints.
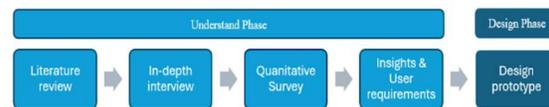

Figure 1: Research Flow

3.1 In-depth Interview

We asked about their daily lives to understand how the AI-enhanced solution potentially fits into their lives to get insights which can help align what we are designing and what our target users need [30].

PACT (People, Activities, Contexts, and Technologies) framework was adapted for the interview questions. This framework focuses on how people leverage technologies to support their tasks within specific contexts [31] and is aligned with HCD/HCAI. The interview was semi-structured and conducted online via Google Meet.

3.1.1 Interview participants

Considering we were still in the early design, we opted for in-depth interviews [32]. Faulkner [33] highlights that the target sample can be determined by focusing the test on users with goals and abilities

representative of the expected user population and with the maximum number of participants that resources allow.

The sampling technique was convenience sampling within purposively selected populations. The target groups were defined but were recruited through non-random channels (convenience). The number of participants was determined by factors such as the research goals, diversity of the target population, and technical constraints.

A total of 14 participants were included, more than initially planned to get comprehensive data (5 students and 5 mental health professionals). In the mental health professional cohort, 4 counselors and 4 psychologists were interviewed. They consisted of three internal counselors (working at startup partner) and 1 external counselor, one internal psychologist and 3 external psychologists. In terms of work experience, 3 of the mental health professionals were experienced in conducting counseling in education institution setting and the others handled general clients. Regarding counseling channels, all of them were experienced in conducting online counseling sessions. Unfortunately, we did not get any male mental health professionals to be interviewed.

In the student cohort, 6 university students were interviewed. They were recruited with the help of our startup partner. Most of student participants were users of the startup's counseling service who had previously stated that they would like to participate in research and the others responded to the call for participants announcement. All of them had experience with going to counseling sessions, whether with counselors, psychologists, and even psychiatrists. There were 5 student participants diagnosed with mental illness. Unfortunately, there was no male in this cohort as no male users responded when we reached out. In terms of experience and knowledge on AI, they interact with AI only as consumers of generative AI such as ChatGPT, Perplexity, etc.

3.1.2 Interview data analysis

Qualitative data gained from in-depth interviews were analyzed with thematic analysis, a method which involves the identification and reporting of patterns in a data set, then interpreting their inherent meaning [34]. The data from interviews was processed with Qualcoder version 3.7

3.2 Quantitative Survey

Online quantitative survey was distributed to students to gain data about their preferences and to prioritize features for an AI-enhanced mental health tool. This survey collected basic demographic information and general habits relevant to mental health, such as their daily routines, common stressors, and previous experiences with mental health services, allowing for a better understanding of their needs. Respondents' answers were kept confidential.

Table 1: Kano Evaluation Table

| | Customer Requirement | Dysfunctional Question | | | |
		Like it	Expect it	Neutral	Live With	Dislike
Functional Question	Like it	Q	A	A	A	O
	Expect it	R	Q	I	I	M
	Neutral	R	I	I	I	M
	Live With	R	I	I	Q	M
	Dislike	R	R	R	R	Q

Note:
Q = Questionable
A = Attractive
R = Reverse
I = Indifferent
M = Must-Have

To identify which feature should be prioritized the most, the survey used Kano Model which is a framework that classifies product attributes and customer requirements into different categories to better understand their impact on customer satisfaction [35]. A list of potential features was presented, and the respondents were asked to rate in pairs of the two answers (functional and dysfunctional) based on their importance and perceived value. This approach allowed us to categorize features as essential, performance-enhancing, or attractive but non-essential.

Answers were tabulated in an evaluation table to classify product features (Table I & Figure 2) [35], [36]. As quoted by Sari [37], there are several ways that can be used to determine Kano category. First, the simplest approach is to classify a feature based on the category that receives the most responses (the mode). Second, If-then method or Blauth's Formula. Third, Better and Worse method which, according to Matzler et al. [38], could help identify the extent of dissatisfaction and satisfaction. The prioritization level is Must-be > One-dimensional > Attractive > Indifferent.

After Kano Model, to measure students' preferences towards combinations of attributes (features), we used conjoint analysis. It is a statistical technique employed to understand how customers perceive the value of various components or features of their products or services, according to Stobierski

[39]. The type of conjoint used was choice-based conjoint (CBC). Conjoint analysis forces respondents to think about products in terms of combination of features and the trade-offs they are willing to make as in real life.

It measured set of preferences in AI-enhanced counseling tool or service. The technique is suitable for our early phase of the design because there have not been many similar services yet in Indonesia, so we could not directly evaluate AI-counseling adoption, we could only measure preferences. The attributes with the levels presented in Kano Model questionnaire and conjoint analysis were based on the result of literature review and in-depth interviews.
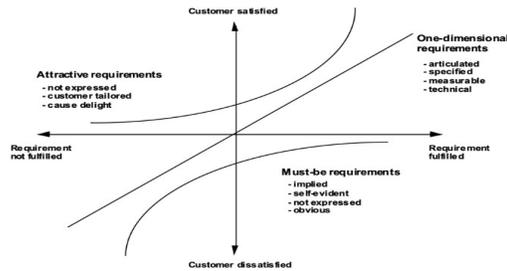

Figure 2: Kano Model Categories (from Berger et al.)

3.2.1 Quantitative survey respondents

Although the survey included demographic, experience-related, Kano model questions, the sample size was set to align with the choice-based conjoint analysis requirements. Following Orme's recommendation [40], the minimum sample was calculated using design-based heuristics per subgroup to ensure stable individual-level estimates.

The respondent characteristics are higher education students (in a university, institute, college, polytechnic, or similar institution) and aged 18 - 28 years old (born in 1997 maximum). The minimum number of respondents:

$$n \geq \frac{500 \times c}{t \times a} \qquad (1)$$

In this formula, n is number of respondents, t is number of tasks per respondent, a represents the number of concepts per task, excluding "None", and finally, c means maximum number of levels in an attribute.

$$n \geq \frac{500 \times 3}{13 \times 3} = 38.46 \approx 39 \qquad (2)$$

The conjoint experiment was constructed using Sawtooth Software's Discover platform. We tested 4 sets of attributes with 3 levels each to avoid overwhelming respondents. We set prohibitions to prevent unrealistic scenarios from appearing. In our case, we prohibited full AI to appear with waiting time levels 'Within a Few Days' and 'Within a Few Weeks'. The number of choice tasks for the experiment was set to 13 per respondent by Sawtooth, a number that aligns with industry best practices for achieving robust individual-level utility estimates while mitigating the risk of respondent fatigue and considering the prohibitions.

The survey was conducted online on Sawtooth Discover. The survey was posted on social media, including the accounts of the startup partner and of a mental health community that we engaged with to help promote the survey. The link was also promoted on X, Instagram, and WhatsApp groups. To maintain the data quality, data cleaning process was conducted. For example, the responses that were completed suspiciously fast and data from people outside of the criteria were removed. Finally, data from 117 respondents was calculated (Table 2).

Table 2: Respondents Grouped by Gender, and Experienced

Gender	Have attended counseling	Haven't attended counseling	
Male	4	5	
Female	56	47	
Non-cis	1	0	
Don't wish to answer	3	1	
Total	64	53	117

3.2.2 Quantitative survey data analysis

Data from quantitative survey, such as demographic and basic information about the participants' daily life context, Kano questionnaires, and conjoint analysis are calculated with the help of statistical software, Sawtooth Software Discover. Sawtooth calculated Hierarchical Bayes (HB) to analyze the responses collected from the participants with CBC. This approach estimated the relative significance of the features and their influence on decision-making. The insights informed the design of an AI-enhanced counseling system tailored to users' needs and priorities.

4 RESULT AND DISCUSSION

4.1 Design Challenge Framing

IDEO encourages to frame design challenge as a starting point to help clarify direction.

a) The problem we tried to solve: Inefficiency in mental health counselling session (not enough time, psychologists do not understand clients' problems).

b) Design question: How might we improve efficiency in a mental health counseling session.

c) Impact we tried to have: We want to improve the counseling session, so the clients' (higher education students) goals can be achieved.

d) Possible solutions: Better session preparation, better goal alignment (better therapeutic alliance).

e) Context and constraints: We want a solution which is in text format because it is quicker and easier to develop, and easier to access. Also, safety must be prioritized.

f) Tweaked design question: How might we improve the efficiency in a counseling session in text format while ensuring safety.

4.2 Understand Phase: Interview Results

4.2.1 Students' POV

Theme 1: Expectations of Counseling Sessions

The students explained that mostly they wanted space to pour out their feelings that they had been holding. "What I hope most is for my story to be accepted and for me to feel more at ease because my emotions have been poured out." A student stated. Then, they want to get tips or suggestions on how to face their problems. "I also got advice, if asked, the counselor could answer with a good solution without judging." They liked professionals who responded quickly, providing non-generic, non-judgmental, and comforting responses.

Theme 2: The Arduous Journey towards Healing

Getting help is challenging as participants must wrestle with concerns over privacy, fear of judgement, and access. Participants expressed reluctance about sharing personal issues with people they might know or encounter regularly. For instance, one participant mentioned their discomfort with local counseling services because the counselors might be people they knew. The issue of privacy is related to stigma or fear of judgement which still become a significant challenge.

As a student said, "I haven't tried it (on-campus counseling) because... I'm not really comfortable. Maybe it's because I'm studying in my own city, and I know a lot of my friends are majoring in that field.

I'm afraid I'll suddenly run into people I know. It seems to people like I have a lot of problems. If possible, people wouldn't know about it."

Theme 3: AI as a Supplement, not a Replacement

The majority of student cohort, prefer some combination of AI and human in counseling service, even though they enjoy using AI. Mostly, they see AI as temporary relief and a place to vent when they have no one to talk to, instead of a real counseling session. A university student highlighted the importance of emotional rapport "It's more about the administrative side. In my opinion, AI can actually help with counseling, but my thoughts are that it's still more comfortable to have counseling with a counselor directly. Because it can't replace personal relationships." They acknowledged the advantage of AI for less critical tasks but raised concerns about the efficacy of AI in understanding complex human emotions and providing responses.

However, some students were more open towards the idea of full AI-based solutions, at least some time in the future. They were the ones experiencing uncomfortable situations, such as someone leaking their stories, getting judgmental responses, or not getting proper attention. To make them comfortable using the AI-enhanced solution, they suggested that developers should be transparent and declare what roles they AI play and how their data is used.

Theme 4: Suggested Features

Many participants expressed interest in AI as a supporting tool in counseling, especially for administrative or repetitive tasks. For instance, AI was mentioned as helpful for taking initial notes before sessions with a human professional, summarizing sessions, and providing recommendations and tracking moods. In conclusion, the students felt comfortable with AI supporting administrative tasks due to privacy and security concerns.

4.2.2 Mental Health Professionals' POV

Theme 1: Challenges in Gathering Client's Data and Extracting Insights – Peeling the Intricate Human Layers

Counselors and psychologists talked extensively about pain points in their job, such as the ones in handling the clients, the counseling mechanism itself, and the ones related to digital format. The most discussed pain point was the difficulties of extracting insights from clients or finding the core issues.

Before a session is initiated, practitioners have limited access to data on how many sessions a client has had, with whom, or what conclusions have been reached. Usually, they must ask an administrator for past records, adding friction and lost context. The lack of integrated history forces every counselor to revisit the same topic when an old client books a new session. In education institution setting, psychologists need to coordinate with many stakeholders, such as the program, lecturers, and other related parties if necessary, including admission office and parents.

During the counseling session, they must face uncertainties. They must identify and prioritize which issue to discuss first, together with the client. This goal setting was crucial. Furthermore, some clients may present many points to explore, and some may be difficult to open up.

"The most difficult and time-consuming part, in my daily life, is usually when the story is really long. When the story is really long, I really have to understand it, in the sense of reading it, right? Because it's not a phone call, right? So, context. I read it first, understand it, absorb it, what the story is like, and so on." said one counselor. This pain point requires a clear mechanism to gather initial data efficiently. The data includes the data about the clients' current state and goals, and their history.

Theme 2: Time-boxed, text-only sessions strain depth

Mental health professionals consistently described how the usual 40-minute chat sessions make it hard to explore clients' issues in depth. When a client answers in one-or-two-word bubbles, the conversation stalls and the session end up running 50–60 minutes just to reach clarity. Unstable connections or clients who were just curious further erode the limited window, leaving root problems only partially addressed.

Theme 3: Referral and triage are subjective

Because the service positions counselors as 'psychological first aid', referring clients to psychologists depends on each counselor's comfort. One noted that extra notes are forwarded to a psychologist only if the case is severe and the judgment left entirely to personal discretion. Without a standard, clients with similar issues may receive very different treatments.

This pain point was mentioned by both counselors and psychologists. "But if we don't have that, it's very subjective from the counselor who, when he feels he's still able to handle it, please handle it first. But again, it's not handling it as someone who gives advice or treatment, but we just provide PFA (psychological first aid) and just listen, but there are some people who maybe this case seems too serious or maybe it's triggering for them personally and as a counselor, they don't want to handle it, yes, they have the right to refuse the session, so it can be very subjective, it really depends on the counselor," A counselor explained.

Theme 4: AI as a tightly supervised partner

Six out of eight mental health interviewees have already used generative AI to support their work and some even had used AI for personal reasons. There are two main reasons behind this AI usage are to help them better understand their clients, and to ensure the counseling sessions are on the right track. For example, hey use popular generative AI such as ChatGPT to help them understand clients, for example finding meaning of unfamiliar jargons and summarizing clients' stories. Some even use AI as their brainstorming partner.

"I also used it for a while, I even subscribed to premium because I was curious. It turned out there were many things I could discuss. I mean, sometimes when we want to discuss things with friends or for example with a senior supervisor, they might not always be available, but in some cases, I can even discuss my case with ChatGPT. What do you call it, like just wanting to find out other points of view, even though sometimes it needs to be challenged. Yes, there are many mistakes, but it's quite helpful in providing a perspective," The psychologist explained.

They simply wanted to know if the direction they took and their assumptions were correct. Another example mentioned was when they 'hit a wall'. It could happen if the clients' cases were uncommon. Therefore, they needed ideas. Furthermore, one participant went as far as using AI to personalize home assignments for their clients. Finally, some of them also have used generative AI to draft psychoeducation materials.

This reality validates the need to provide professionals with the appropriate AI tools, rather than leaving them with workarounds for existing AI systems. All interviewed practitioners recognized the inevitability of technological advancement. The suggested features by the participating practitioners, from the most favorite to least favorite, were AI

summary/highlight/transcript, AI assistant (brainstorming), case formulation, integrated client history, AI triage, AI scheduler, Psychological First Aid, and diagnostic tool.

Theme 5: AI as a Complement to Human Professionals

The counselors and psychologists interviewed are generally open to adopting AI. However, they all agreed that AI should be regarded as a supporting tool, instead of replacing human professionals. Real empathy, not simulated empathy, is needed to connect with the clients. One psychologist said, "AI cannot yet fully replace the role of psychologists to any extent, especially if the need is for in-depth psychotherapy." For psychotherapy, AI currently might not be able to deliver the methods. They need human judgement.

Theme 6: Documentation burden

Post-session notetaking often happens days later because consecutive bookings barely leave time for writing. While formal reports do exist (in business-to-business context), counselors would like a simple hand-over template. Today they rely on memory or raw chat downloads. Therefore, AI summary or highlights is the feature most mentioned.

Theme 7: Concerns

Data-sharing must involve consent steps, given ethical codes and potential breaches. The idea of AI which generates suggestions is appealing, but only if sources are transparent and personal identifiers can be redacted before text is sent to external models, especially after incidents like hacked accounts were mentioned during interviews. The professionals interviewed suggested that we implement AI with ethical standards like the ones they adhere to.

Theme 8: Additional Considerations for Inclusivity

Additional details need to be considered when designing the solution because disabled students should be able to use the webapp when they need to. Simple words must be used. Finally, we must involve disabled students in the design process, because things that seem obvious to most people, might be challenging for students with disabilities.

4.3 Understand Phase: Survey Results
4.3.1 Respondent characteristics

Most of the respondents (41.03%) perceived their mental health as fair, then 29.06% rated their mental health as poor. Following that, 22.22% of the respondents perceived their mental health as good.

Only 5.98% of the respondents said that their mental health was very poor and 1.71% of the respondents rated their mental health as very good. Out of 64 student respondents who had attended counseling, 28 respondents (43.75%) reported that they had been diagnosed.

The respondents are very familiar with using smartphones. However, only 32.48% of respondents had used mental health apps. Most respondents (80.34%) had used AI for mental health. They reported usage of generative AI like ChatGPT, Gemini, Meta AI, to vent and ask for solutions.

4.3.2 Kano model result

There were four features tested individually with Kano Model, AI chat, Chat with Human Mental Health Professional, Session Summary, and Recommendation. Those features were chosen based on the in-depth interviews. The respondents must answer how they would feel with and without those features.

Table 3: Kano Model Tabulation

Features	A	I	M	O	Q	R	Total	Raw Count Category	A+O+M	I+R+Q	Final Category	$\frac{A+O}{A+O+M+I}$	$\frac{O}{A+O}$
AI Chat	39	34	11	19	3	11	117	A	69	48	A	0.56	-0.29
Chat with Human MHP	35	16	19	39	5	3	117	O	93	24	O	0.68	-0.53
Session Summary	21	19	25	50	2	0	117	O	96	21	O	0.62	-0.65
Recommendation	29	18	15	48	6	1	117	O	92	25	O	0.70	-0.57

Table 3 shows the Kano Model results from respondents. According to the evaluation rule M>O>A>I, Chat with Human MHP, Session Summary, and Recommendation lead among other features. They are categorized as One-dimensional (O) based on raw counting and Blauth's formula. Better/Worse scores can be used to identify how much satisfaction/dissatisfaction a feature might bring or the order of which feature should be prioritized. To reduce the pain point of users, we might want to focus on Worse score when prioritizing features. To maximize satisfaction, we could focus on Better score when prioritizing features.

Session Summary has a Better score of 0.62 and a Worse score of -0.65 (the highest Worse score). It suggests that a great summary will delight users, while a poor or non-existent one will cause significant dissatisfaction. Similar to Session Summary, Recommendation, with high Better score of 0.70 (the highest of all features) shows it has great potential to drive satisfaction, while the Worse score of -0.57

indicates a clear downside if the recommendations are poor. The result indicates that, for our respondents, the Session Summary and Recommendation development must be prioritized. They do not want to leave empty-handed. It means the accuracy and relevance of the AI-generated summary and recommendations must be ensured.

Chat with Human MHP is also important to the respondents. Even with the simple count, O is the highest (39) and Blauth's formula confirms this is a One-dimensional feature. The Better/Worse scores support this, a high Better score of 0.68 means it will significantly increase satisfaction, while the moderate Worse score of -0.53 means its absence is a noticeable negative.

Regarding AI Chat, its highest vote count is for Attractive (39), and Blauth's formula confirms this classification because the "valuable" votes (69) outweigh the "non-valuable" ones (48). The Better score of 0.60 is high, showing it has a good potential to increase satisfaction. The low Worse score, -0.29, indicates its absence won't cause significant dissatisfaction. However, it might become a delighter in the future.

4.3.3 Conjoint analysis result

In conjoint analysis, the respondents chose the combinations of features which they preferred (Table 4). The importance of each feature could be analyzed from attribute importance (Figure 3).

Table 4: Attributes and levels in conjoint analysis

Attribute	Option A	Option B	Option C
Wait Time	Within a Few Days	Within a Few Weeks	Immediate
Provider	AI only (chatbot)	Hybrid (AI + Human)	Human counsellor-led + AI assistant
Privacy	Full anonymity + auto deletion	Fake name + option to delete conversations	Data sharing with permission + option to delete
AI responsiveness	Learns about moods & adapts	Detects mood, replies supportively	Neutral, basic response

Table 5: Utilities Scores

| Attribute	Level	Utility	Standard error	Lower 95% CI	Upper 95% CI
Wait Time	Immediate	42.47	3.26	36.01	48.94
	Within a Few Days	6.67	2.08	2.54	10.80
	Within a Few Weeks	-49.14	3.78	-56.65	-41.64
Provider	AI only	-78.15	4.80	-87.67	-68.64
	Hybrid (AI + Human)*	38.91	3.74	31.50	46.33
	Human counselor-led + AI assistant**	39.24	4.62	30.08	48.41
Privacy	Full anonymity + auto deletion	-9.10	1.77	-12.60	-5.59
	Fake name + option to delete conversations	10.67	1.56	7.58	13.76
	Data sharing with permission + delete option	-1.57	2.21	-5.94	2.81
AI Response	Learns about moods & adapts	28.13	2.37	23.42	32.85
	Detects mood, replies supportively	25.28	2.78	19.76	30.79
	Neutral, basic response	-53.41	4.39	-62.11	-44.71
None option	None option	-120.13	15.59	-151.06	-89.19
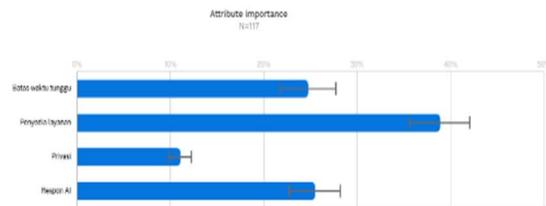
Figure 3: Attribute Importance

In the first place, Provider (*Penyedia Layanan*) had a relative importance of 38.84% with the 95% confidence interval of 35.63% - 42.05%, indicating on average, around 40% of their decision was based solely on who or what was providing the counseling. The most critical factor in satisfying this demand is the Provider.

In the second place, AI Response had a relative importance of 25.44% with the 95% confidence interval of 22.71% - 28.18%. It could be said that AI Response shared second place with Wait Time, because the difference was insignificant and they

even overlapped when the 95% confidence interval was considered. Wait Time (*Batas Waktu Tunggu*) had a relative importance of 24.70%. The 95% confidence interval for this estimate is 21.69% - 27.71%. In the last place was Privacy (*Privasi*) which had relative importance of 11.02% with the 95% confidence interval of 9.82% - 12.22%. Aligned with interview results, trust can increase if the developers are transparent in communicating the AI's role and how the users' data is processed.

Then, we analyzed further on the attribute utilities of each level (Table 5). From the attribute utilities, it could be seen that the respondents preferred combinations of human and AI over full AI-based solution. The difference between the two levels (Hybrid (AI + Human) and Human counsellor-led + AI assistant) is subtle, and it could relate to their similarities. Then, Immediate Response was reported as the most preferred level. Also, the AI generating adaptive responses was the most preferred about its attribute. This result is aligned with what we have learned previously from in-depth interviews. The respondents might seek to feel understood. The analysis of the Privacy attribute revealed that the most preferred level was the ability for users to use a fake name combined with an option to delete their conversation history.

4.3.4 Discussion

This research aimed to design a usable AI-Human hybrid mental health counseling web app with human-centered AI framework for Indonesian youth, and which can support the work of the mental health professionals in the midst of increasing service demand. We explored challenges, and user needs of youth and mental health professionals. Also, we identified important features for an AI-enhanced mental health support, and the trade-offs youth would be willing to make. The results point to a clear need for systems that prioritize user-centric features, transparency, and stakeholder collaboration to ensure effective implementation.

Based on in-depth interviews and quantitative survey, the concept of a hybrid model of AI and human mental health professionals repeatedly emerged. The advancement of AI was acknowledged by both student and mental health professional participants/respondents. Mainly, they agreed AI could function as a supporting tool for reducing the workload of mental health professionals. This result is aligned with previous work which argues that the optimal environment should perhaps not be wholly automated but rather a hybrid [27].

In terms of user experience, some concepts were preferred by the student and mental health involved in this research. AI could support as an entry point, gathering initial information and conducting initial assessment. For young people, the availability of AI can help them to immediately pour out their problems. This preference has been pointed out in the interviews and quantitative survey. Moreover, this might better prepare the mental health professionals to handle their clients and save precious time for meaningful interactions between the provider and clients. This also might help to make the session efficient amid time constraints.

At the end of session, AI might be used to summarize and highlight important points, then help the psychologists and counselors analyze cases. A compromise might be needed on the deployment of AI during counseling session. Students were more cautious about AI during session. However, mental health professionals were divided. Some would appreciate AI's help as assistant real-time during the session, and some preferred it after the session.

Also aligned with prior research, we found that personalization and empathetic responses are critical to user satisfaction and adherence, especially in youth who may be more responsive to "human-like" AI elements [41], [42], [43]. On the other hand, the doubt about AI's ability persisted. This aligns with previous studies [44], [45] which mentioned AI's limitation to deeply understand the emotional and psychological nuances of human conversations and fully replicate the empathy and emotional insight provided by ideal human professionals. Many current systems rely on superficial cues to signal empathy, they rely on 'safe scripts' with apologetic or sympathetic phraseds sprinkle, but often lack the deeper consistency, insight, or warmth that users subconsciously look for [46].

The recurring theme of "AI as a supporting tool" reinforces other studies [47] which state that blending automated tools with professional guidance helps maintain trust and ethical rigor, especially when the users include vulnerable youth [3], [25], [48]. Therefore, human intervention should be a core driver in these technologies to ensure safety and maintain trust.

AI can support mental health service in a safe way when integrated as an entry point in the initial phases of therapy (active listening and problem exploration) for mild to moderate psychological issues [49]. Also, AI has been integrated to adapt to how users are

feeling and assist human mental health professionals to help give users the right kind of support at exactly the right moment [50]. A "human-in-the-loop" element ensures therapist oversight to optimize treatment delivery. Hence, instead of AI fully making decisions, humans guide, supervise, and refine results from AI.

In the future, AI might understand human emotions, show empathy, capture cultural nuances better. AI chatbot can learn to acknowledge feelings and respond with care when given appropriate training data [51]. However, even if conversational AI can mimic empathic dialogs, the essence of seeking empathy is more than receiving ideally worded responses. It includes a yearning for genuine care and engagement from another person [52]. Therefore, it is suggested that humans are involved in delivering interventions.

4.3.5 Proposed design

Based on the findings, we propose this design for the student counseling sessions. This prototype was made by Figma's AI, Figma Maker. Recognizing the importance of AI in the beginning of session to gather initial information and make the session efficient, we have designed student's dashboard and AI chat interface.
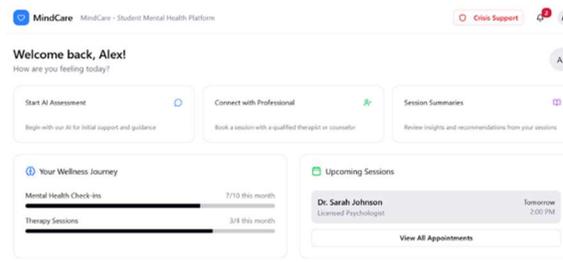

Figure 5: AI Chat

Figure 6: Session Summary for Student

Figure 4: Student's Dashboard

The dashboard (Figure 4) shows the student's history and navigation to AI chat (AI-powered assessment) and mental health professional. The AI chat (Figure 5) will then ask series of questions related to the student's mental health issues. The result of this is a summary that a counselor or psychologist can use to prepare for the counseling session. Hence, students can experience the AI+human hybrid approach.
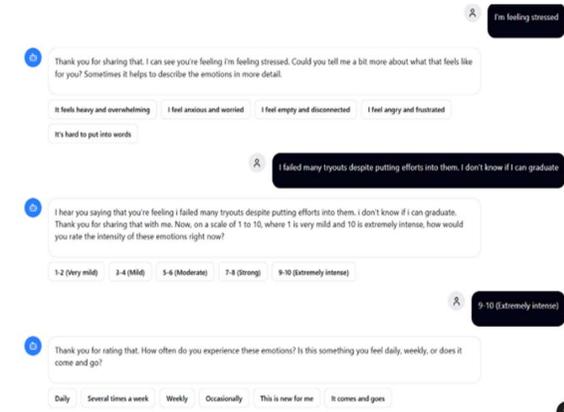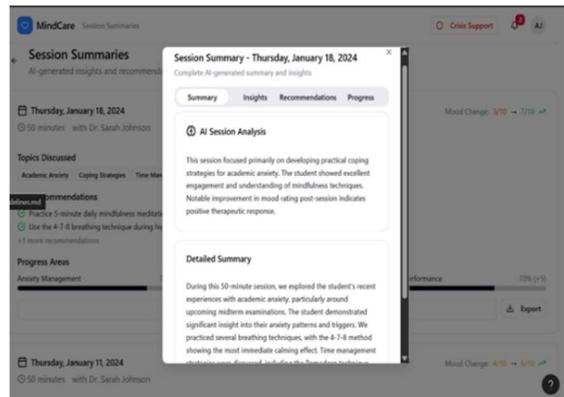
The student can also see the session summary after the session is completed (Figure 6). Psychologist/counsellor also has a dashboard where they can see the client or the student's history (Figure 7).

Figure 7: Full Client History

4.3.6 Research Contribution

Our study in Indonesian context aligns with previous research which underscores AI-driven tools' potential to reduce barriers such as stigma [21]. Both groups of youth we interviewed and surveyed preferred to maintain their privacy while still longing for emotional rapport. For example, they preferred the option to use fake names and were concerned about being judged. On the other hand, they still wanted to feel understood and be given relevant guidance. Table 6 describes the nuances we discovered in this research.

Our research results indicate that both AI and human mental health professionals are necessary. It is not only relevant in the context of existing literature, but also for the context of youth and mental health in Indonesia who were our research participants and respondents. Our recommendations for the near future are:

1. Integrate AI as an entry point to mental health service. It can perform tasks such as case formulation or help users articulate their feelings.
2. Human mental health professionals deliver the interventions, while AI supports as a transcriber.
3. At the end of session, AI helps to produce a summary of the session. It might also help by highlighting important points.

Table 6 Comparison of Research Findings with Prior Literature

Dimension	General Literature	This Study (Indonesian Youth & Professionals)
Privacy	Importance of general anonymity and data security. [6]	Identified a specific preference for "fake names" to mitigate high social stigma and fear of judgment in local school or campus settings
Model Validation	Theoretical support for combining AI with human experts. [27]	Interviews, Kano Model, Choice-based Conjoint analysis proving that Indonesian youth specifically prioritize human-led sessions enhanced by AI over standalone AI solutions.
Feature Prioritization	AI as a supplement. [5]	Identified how AI should be specifically integrated based on youth and mental health professionals' perspectives.

In terms of computing, in future development, this user experience points to a need for a flexible yet safe framework. For example, the user experience might be supported by adapting some parts of a framework suggested in a paper by Howcroft and Blake [46]. It is built on three capabilities: Personalized Memory, Dynamic Adaptation, and Stylistic Flexibility. The system uses Retrieval-Augmented Generation (RAG) with adapter modules, and long-term memory to build user profiles which could help both mental health professionals and youth themselves to remember the events and emotions that have surfaced. Then, this could extend to a "match, then steer" principle, where the system first mirrors the user's current tone to build rapport, then gently shift the exchange toward a more constructive emotional state.

5 CONCLUSION AND FUTURE WORK

This research aimed to design the usability of an AI-Human Hybrid Mental Health Counseling Web App to support Indonesian youth and mental health professionals. The research revealed that while there is growing innovation, significant technical capabilities and ethical design limitations exist. The core findings from literature reviews, interviews, and survey were the consistent preference for a hybrid model combining AI and human professionals to reap benefits of AI while minimizing the risks. Both students and professionals agreed that AI should act as a tool to complement, not to substitute for, human psychologist or counselor. The human element was considered the driver of the solution, with AI helping to reduce professionals' workloads. Therefore, with AI-human hybrid, the efficiency of the session could be improved while still placing humane care at the center.

Regarding user experience, participants preferred using AI for administrative tasks such as onboarding clients, conducting initial assessments, and providing session summaries. This would allow mental health professionals to dedicate more time to in-depth conversation. Hence, increasing the efficiency of mental health counseling session. However, opinions were varied on AI's role during a counseling session; students were more cautious, whilst some professionals welcomed the idea of an AI assistant.

The strength of this study is its focused approach on AI-driven mental health counseling for young people, capturing a niche yet growing area of research. By incorporating qualitative and quantitative methodologies, the study provides diverse perspective on the current state of practice.

This study has some limitations. First, the evaluation phase of HCAI was not conducted.

Constrained by time and resources, we only focused on understanding and design & development phase. Second, this study specifically focused on text-based AI-enhanced mental health counseling tools.

Third, this research inherently excludes valuable insights about other forms of digital mental health interventions, such as those utilizing voice-based AI assistants, visual assistants, virtual reality, augmented reality, social robots. Fourth, the quantitative survey results cannot be generalized due to its non-random sampling technique to recruit participants. Consequently, the findings, while internally valid for this cohort, cannot be statistically generalized to the broader youth population. The 95% confidence intervals presented in the results should therefore not be interpreted as estimating the true population parameters. Instead, they are reported to indicate findings derived from our specific sample. Fifth, this research involved few male participants and respondents. Hence, future research should attempt to recruit more males to account for gender differences.

Future work should validate these insights through dedicated usability evaluations. Also, there is a need to explore further tri-part therapeutic alliance which includes mental health professional, app, and client. We need to measure how much technology, in this case AI, can improve therapeutic alliance between mental health professionals and clients. Finally, future work needs to explore how to balance privacy and effective personalization by AI.

Overall, this research contributes the empirical foundation for an AI-enhanced solution that solves for efficiency through hybrid approach while preserving the human connection essential to Indonesian youth. By integrating AI as an entry point for assessment and a post-session assistant, it is expected to bridge the gap between Indonesia's high mental health service demand and its limited professional capacity.

AUTHOR CONTRIBUTION

Elga Theresia: Conceptualization, Formal Analysis, Investigation, Methodology, Resources, Visualization, Writing and Editing.
Tanty Oktavia: Methodological Guidance, Supervision, Research Grant Acquisition, and Review.

DATA AVAILABILITY

The raw data supporting the conclusions of this article will not be made publicly available due to ethical considerations and participant privacy. Participants were assured of data confidentiality during the informed consent process. Aggregated and anonymized results are presented in this manuscript.

DECLARATION ON AI

AI helped to generate initial transcriptions of the interviews. The transcriptions then manually edited the transcriptions. During in-depth interview analysis, ChatGPT 4o API was used sparingly to make sure important findings were found and coded whether through AI search or AI chat. The codes were all identified by the authors.

DISCLOSURE AND CONFLICT OF INTEREST

The first author discloses a part-time employment relationship with the mental health startup that provided resources for participant recruitment.

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