Review Article

Barriers to hospital-at-home acceptance: a systematic review of reasons for patient refusal

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Background: Hospital-at-home (H@H) models have gained recognition as a safe and potentially cost-effective solution for the current rising global healthcare needs. However, despite these models' potential, their adoption has been limited partly due to patients refusing care at home. This systematic review analyses the reasons behind their refusal.

Methods: We searched five databases: Embase, Google Scholar, PubMed, Scopus, and Web of Science, limiting our search to papers from 2005 to 2024. Our search focused on papers reporting patient-provided reasons for declining treatment in a H@H setting without language or country restrictions. In addition to reasons for refusal, we extracted patient demographics and predictors for refusal to ensure a broad understanding of the factors influencing patient decisions. The quality of the studies included was evaluated using the Mixed Methods Appraisal Tool (MMAT) version 2018.

Results: From the 1,067 articles identified, seven met our inclusion criteria. The papers reported reasons from 418 patients participating in diverse H@H models from the United States, United Kingdom, Spain, and Singapore, primarily focusing on acute home-based care. The most common reasons for declination included concerns about model effectiveness, safety at home, preference for in-hospital care, physician advice, family burden, and visitor concerns. Additionally, common significant demographic factors associated with decliners were the enrollment site, partnership or marital status, risk of adverse outcomes, and previous healthcare utilization.

Conclusions: Understanding patients' motivations for declining H@H is crucial for its successful implementation. Targeted communication strategies and collaboration between healthcare providers are paramount to ensure that patients understand the benefits and safety of H@H models. Future research should explore effective communication and engagement techniques to address patient apprehensions and broaden H@H adoption.

Keywords: Hospital-at-home (H@H); home-based hospital; patient declination; patient perceptions; patient preferences

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Introduction

The modern healthcare system is struggling to meet current global healthcare needs. With the increase in the aging population, rise in chronic morbidity, escalating costs of healthcare services, and overload of work in hospitals, new solutions have become paramount (1). Hospital-at-home (H@H) is a care model that has existed as a latent solution since the late 20th century; however, with the invention and improvement of telehealth technologies and the impact of the coronavirus disease 2019 (COVID-19) pandemic, H@H implementation has expanded rapidly since 2020 (2-5).

H@H programs provide acute or subacute treatment in a patient's residence for care that would typically require admission to a hospital (3,6-8). By definition, patients receive the same treatment they would have received in the hospital, including monitoring, diagnostic testing (e.g., laboratory tests, electrocardiograms, and radiographs), intravenous (IV) medication, and active in-person care from nurses and physicians (7,9).

Among H@H's principal aims is reducing bed occupancy rate while improving the quality of care (8). This is mainly achieved through its two types of programs: early supported discharge (ESD) and admission avoidance (AA) (6,10,11). ESD programs work to accelerate the discharge of admitted patients by continuing care at home. AA Programs directly admit patients into H@H after assessment in an external consult, emergency room (ER), or medical admissions unit, thus avoiding physical contact with the hospital or patient stay (4,10).

It is commonly believed that the hospital is the safest place to receive acute care. However, recent studies show that H@H is not only non-inferior in terms of outcomes compared to brick-and-mortar for patients with acute episodes (12,13) but also better for central aspects of patient management. Benefits include decreased use of sedative medications or chemical restraints and lower incidences of delirium and transmitted infections (3-6,10,14). Additionally, patients who received H@H have a lower risk of functional decline from limited mobility and better physical therapy outcomes as they can be involved in their daily living activities (13,15). In a systematic review and meta-analysis, Shepperd *et al.* (9) showed that patients assigned to H@H had a significantly lower risk of death at six months follow-up. Moreover, in another meta-analysis, Caplan *et al.* (6) also found a statistical and clinical reduction in mortality, readmission rates, and cost compared with in-hospital care.

Besides clinical outcomes, patients' and caregivers' perceptions are a crucial metric of overall service quality since they are essential to achieving health equality and ideal healthcare delivery (16,17). Further studies have shown that patients and caregivers have higher levels of satisfaction with H@H (9,14,18). Despite this, a significant number of patients continue to decline care at home.

There are several systematic reviews about the effectiveness of H@H for different conditions and settings, but only one scoping review investigating the perceptions of patients and caregivers (19). No research has yet focused on the reasons why patients decline receiving H@H even when outcomes have been proven to be similar or superior. In this systematic review, we analyze why patients refuse H@H, focusing on the motives provided by patients after being offered care at a H@H setting. We present this article in accordance with the PRISMA reporting checklist (available at https://mhealth.amegroups.com/article/view/10.21037/mhealth-24-23/rc) (20).

Highlight box

Key findings

- Few studies have analyzed the reasons why patients refuse hospital-at-home (H@H) care.
- Motives for declination were related to four major topics: concerns and Ignorance about the H@H model, characteristics of patients' homes, presence and relationships with family or caregivers, and idiosyncratic or psychological concerns.

What is known and what is new?

- Studies have shown that H@H is not only non-inferior in terms of outcomes compared to traditional in-hospital care but also better for central aspects of patient management. However, a significant number of patients continue to decline care at home.
- This systematic review presents the most common reasons that led patients to refuse H@H among different hospitals, H@H models, and countries.

What is the implication, and what should change now?

- Lack of knowledge regarding this care model could be either a facilitator or a barrier to acceptance, and patients' psychological factors and auto-perception may determine how they see it. Targeted communication strategies and collaboration between healthcare providers are paramount to ensure that patients understand the benefits and safety of H@H models. Further research exploring the relationship between specific demographic characteristics is paramount for better understanding and predicting what leads a patient to decline.

Methods

We systematically searched five databases: Embase, Google

Scholar, PubMed, Scopus, and Web of Science, and screened the reference list of the included articles for a more comprehensive search. We limited our scope to the first 100 papers in Google Scholar to ensure that only the most relevant were screened.

We tailored our search string to each database, and if applicable, we used a combination of Medical Subject Headings (MeSH) and free text. An example of our search includes the following major topics connected with the Boolean Operator "AND":

- H@H: "hospital-at-home" OR "hospital at home" OR "home-based hospital" OR "home hospital" OR "home care service" OR "hospital care at home" OR "early supported discharge" OR "admission avoidance".
- Patient refusal: declin* OR refus* OR reject* OR barrier* OR perception* OR concern* OR "patient rejection" OR "patient perspective".

Detailed queries are available in the Table S1.

Selection criteria

Two independent authors screened titles and abstracts and assessed the suitability of full-text papers. In case of disagreement, two additional authors evaluated the articles. We included papers discussing reasons why patients declined to be treated at H@H. While our priority was articles describing reasons from patients who refused H@H care from implemented models, we also included papers providing refusal motives from hypothetical H@H case scenarios. Although the concept of H@H has been implemented since before the beginning of the century, the current understanding and practice were defined after an authoritative review by Shepperd & Iliffe in 2005 (21). For this reason, we included papers published between January 1, 2005, and January 17, 2024.

Reasons for exclusion consisted of (I) papers about home care models different from H@H, such as hospice care, end-of-life care, self-care at home, or exclusively telehealth (including remote monitoring); (II) papers providing empirical or hypothetical theories for patient declination; (III) patients' general perspectives about H@H; (IV) papers about patients who accepted H@H care; (V) reviews; (VI) abstract-only publications; (VII) not article papers; (VIII) papers before 2005.

Data extraction, synthesis, and analysis

For an exhaustive analysis, in addition to figure out the reasons for declining H@H, we analyzed and charted information concerning the country, study design, interviewing methods, patient demographics, H@H type, and source study [e.g., randomized controlled trial (RCT) or preliminary study]. To analyze declining reasons, we created different categories based on their similarities.

Quality assessment

The quality of the studies included was evaluated using the Mixed Methods Appraisal Tool (MMAT) version 2018 (22). It is designed for systematic reviews that include qualitative, quantitative, and mixed-methods studies. This tool takes into consideration the characteristics of each design to provide an objective assessment of the independent designs. We chose it to use the same tool to review the quality of all our studies. Two different authors assessed the quality of the articles, and in case of disagreement, a third author emitted the ultimate decision.

Results

Our database search yielded 1,067 articles, which were imported and managed in EndNote 20. Deduplication was performed manually and assisted by EndNote, resulting in the removal of 455 papers. After title and abstract screening, 551 additional articles were excluded. We sought 61 papers, from which we retrieved 60 and included seven that met our inclusion criteria. No additional studies were identified through reference list screening. A descriptive flowchart of the selection process is provided in *Figure 1*.

Two additional studies were considered for inclusion, but after further analysis, they were excluded. Both studies interviewed patients about their perspectives on H@H but did not provide more detailed characteristics of the patients who refused or their reasons behind it. One simply mentioned that some patients who refused felt too sick for home care (23), while the other analyzed shared perceptions with patients who received H@H (24).

Descriptive analysis of the studies

While our inclusion criteria encompassed papers since 2005, our oldest paper was published in 2010 (25). On the other hand, the latest paper included is from 2023 (26). Of the seven papers, three are from the United States (26-28), two are from the United Kingdom (29,30) and one each is from Spain (25) and Singapore (31). The study designs were

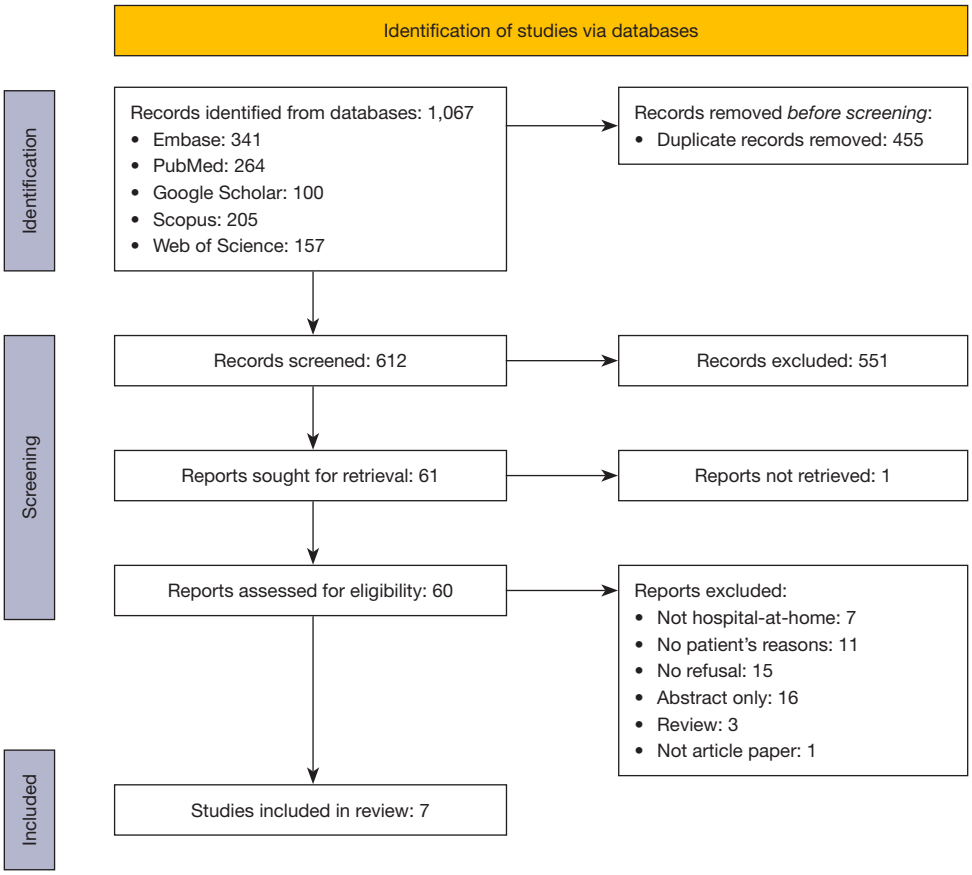

Figure 1 PRISMA flow diagram for the study selection process.

heterogeneous and included qualitative (27,30), quantitative non-randomized (25,31), mixed methods (26,28), and a quantitative RCT (29). A more comprehensive analysis of the studies is provided in *Table 1*.

Objectives of the studies

Of the seven identified studies, two had the main objective of analyzing patients' reasons for refusing H@H (26,28). Conversely, two studies aimed to analyze the characteristics of patients who accepted care at home and their reasons behind it (25,29). Among the three remaining studies, two assessed patients' perceptions as barriers or facilitators for H@H (30,31), while the other aimed to assess the reasons why patients either accept or decline (27).

H@H settings and collection of declination reasons

Three different types of H@H were presented: acute home-based care, which was the most common (25,26,28,30,31), post-acute home-based transitional care (31), and ESD (29). Two studies did not implement a H@H model but instead questioned patients about receiving hypothetical H@H care (25,31). Direct interviews or questionnaires retrieved patients' reasons for declining. Three papers reported verbatim documentation of reasons (26-28). Additional demographic information was retrieved from electronic health records (EHRs) of patients who consented (25-28,31).

Patient declination reasons and demographics

We analyzed the declining reasons for 418 patients. In the study performed by Paulson *et al.*, a total of 213 patients declined H@H; however, only 13 provided their reasons for declining (26). Three studies included reasons provided by caregivers or proxies in cases where patients could not (27,28,31). A total of 29 different reasons were identified and ranked according to the number of different studies and

Table 1 Descriptive analysis of the studies included

Author, year	Country	Study design	Sample size [total in study]	Data collection	Patient demographics (statistically significant)	Reasons for declining	H@H type	RCT or base study
Jiménez S *et al.* (25), 2010	Spain	Prospective cohort	37 [129]	Direct interview Data extraction from ER notes	Accepted *vs.* declined: • Married: 61% *vs.* 13%, P<0.001 • Presence of caregiver: 65% *vs.* 35%, P=0.006 • Number of visits to ER during last year: 2.0 *vs.* 1.1, P=0.029 • Number of current meds: 5.7 *vs.* 3.9, P=0.006 • APACHE II: 10.3 *vs.* 8.5, P=0.023	(I) Concern that home is unsafe (II) Concern that H@H would meet care needs (III) Concern about burdening family	Acute home-based care	–
Collins AM *et al.* (29), 2014	UK	Feasibility study, randomized controlled trial	18 [42]	Questionnaire	No statistically significant demographic differences	(I) Concern that H@H would meet care needs (27%) (II) Other (concern that home is unsafe, no caregiver present) (27%) (III) Extra blood tests (5%) (IV) Extra outpatient appointments (5%)	Early supported discharge	–
Dismore LL *et al.* (30), 2019	UK	Qualitative study within an RCT	13 [89]	Semi-structured interviews	N/A	(I) Fear of being alone when unwell (38%) (II) Unwell family members at home (23%) (III) Concern about getting visitors (privacy issues)	Acute home-based care	Home treatment of COPD exacerbation selected by DECAF score: a non-inferiority, randomized controlled trial and economic evaluation
Saenger P *et al.* (27), 2020	US	Retrospective qualitative study from a case-control study	147 [442]	In-person or telephone survey Verbatim documentation Data extraction from EHRs	Accepted *vs.* declined: • Age: 77 (SD =17) *vs.* 69 (SD =19) years; P<0.001 • Female: 71% *vs.* 61%; P=0.031 • Medicaid or dual-eligible status: 43% *vs.* 10%; P<0.001 • Dehydration: 10% *vs.* 2%; P=0.006 • UTI: 24% *vs.* 13%; P=0.003 • "Other" diagnoses: 9.4% *vs.* 23%; P=0.002	(I) No reason provided (35%) (II) Prefer in-hospital care (15%) (III) Concern that H@H would meet care needs (13%) (IV) Do not want visitors (11%) (V) Inconvenience for family members (7.5%) (VI) Perception of insufficient social support at home (4.8%) (VII) Physician advised against (3.4%) (VIII) Imminent discharge (3.4%) (IX) Caregiver needs respite (2.7%) (X) Concern that home is unsafe (2%) (XI) Concern about getting family members sick (1.4%) (XII) Need to consult with PCP before agreeing (0.7%)	Postacute home-based transitional care	Association of a Bundled Hospital-at-Home and 30-day Postacute Transitional Care Program With Clinical Outcomes and Patient Experiences
Lai YF *et al.* (31), 2021	Singapore	Cross-sectional quantitative study	33 [120]	Survey Questionnaire Data extraction from EHRs	Logistic regression for acceptance: • Enrolment ward location: cheaper wards less inclined to accept; 0.12 (95% CI: 0.02–0.067), P=0.015 • Income level: <$3,000 more inclined to accept; OR 5.79 (95% CI: 1.08–31.02), P=0.04	(I) Prefer in-hospital care (74%) (II) Discomfort with surveillance technologies (65%) (III) Concern that H@H would meet care needs (58%) (IV) Wish for medical aid in sight (68%) (V) Concern about burdening family (46%)	Acute home-based care	–

Table 1 (*continued*)

Table 1 (*continued*)

Author, year	Country	Study design	Sample size [total in study]	Data collection	Patient demographics (statistically significant)	Reasons for declining	H@H type	RCT or base study
Levine DM *et al.* (28), 2022	US	Mixed methods analysis of an RCT	157 [248]	Survey by research assistant Verbatim documentation of the first sentence provided Data extraction from EHRs	Declined *vs.* accepted: • Partnered: 24% *vs.* 37%; P=0.03 • Comorbidity count: 9 *vs.* 8; P=0.04 • Hospital admission in the last 6 months: 50% *vs.* 36%; P=0.03 Predictors for declining (multivariate modeling): • Community hospital *vs.* academic center: 53% *vs.* 42%, OR 2.2 (95% CI: 1.2–4.2) • Partnered: 24% *vs.* 37%, OR 0.4 (95% CI: 0.2–0.8)	(I) Prefer in-hospital care (20%) (II) Concern that H@H would meet care needs (20%) (III) Physician advised against (16%) (IV) No reason provided (11%) (V) Concern that home is unsafe (11%) (VI) Concern about burdening family (6%) (VII) Other reasons (6%) (VIII) Could not reach caregiver (4%) (IX) No response captured (3%) (X) Facility time constraints (2%)	Acute home-based care	Hospital-Level Care at Home for Acutely Ill Adults: a Pilot Randomized Controlled Trial
Paulson N *et al.* (26), 2023	US	Prospective convergent-parallel mixed methods	223, but only 13 for qualitative interview [911]	Semi-structured qualitative interviews Verbatim documentation Data extraction from EHRs	Declined: • Treated at NWWI site: P<0.001 • EDI score >60: P=0.004 • Q2 2021 admission: P=0.040 • Language other than English: P=0.044 • Familiarity with patient portal: P=0.014	Lack of clarity about H@H: (I) Unfamiliarity with H@H (30%) (II) Physician advised against (30%) (III) Misinformation related to H@H (30%) Domestic challenges to care at home: (I) Desire to keep home habits the same (54%) (II) Concern about keeping up with home responsibilities (38%) (III) Too much disturbance at home (38%)	Acute home-based care	–

H@H, hospital-at-home; RCT, randomized controlled trial; ER, emergency room; APACHE II, Acute Physiology and Chronic Health Evaluation II; N/A, not applicable; COPD, chronic obstructive pulmonary disease; DECAF, Dyspnoea, Eosinopenia, Consolidation, Acidaemia and atrial Fibrillation; SD, standard deviation; UTI, urinary tract infection; PCP, primary care physician; CI, confidence interval; OR, odds ratio; EHRs, electronic health records; NWWI, Northwest Wisconsin; EDI, epic deterioration index.

the overall number of patients reporting them. Because we considered that reasons shared among papers were more important than those merely shared among patients in the same study, we ranked primarily based on the number of studies reporting them.

Six reasons were present in more than one paper: concern that H@H would meet care needs (five studies, 74 patients) (25,27-29,31), concern that the home is unsafe (four studies, 25 patients) (25,27-29), preferring in-hospital care (three studies, 78 patients) (27,28,31), the physician advised against (three studies, 34 patients) (26-28), concern about burdening family (three studies, 25 patients) (25,28,31), and concern about getting visitors (27,30). Jimenez *et al.* did not provide the number of patients for each reason (25). Additionally, many patients provided no reason (two studies, 69 patients) (27,28). In *Table 2*, we present the complete list of reasons.

Regarding sociodemographic characteristics, we only included the statistically significant ones, compared to patients who accepted, or characteristics that were predictors for declining. Of the seven studies, three identified five or more characteristics (25-27), one identified two (31), one identified three characteristics and two predictors for declining (28), and two studies found no statistically significant differences between acceptors and decliners (29,30) (*Table 1*). We found 16 distinct demographic characteristics of patients who rejected H@H (*Table 3*). Enrollment center location was the most common, mentioned in three different papers (26,28,31). It was followed by partnership or marital status (25,28), risk of adverse outcome (25,26), and the number of ER visits and hospital admissions during the past year (25,28).

Quality assessment

The authors of the MMAT discourage the calculation of an overall score from the ratings of each criterion. Considering this, we provided a detailed presentation of the ratings of each study in *Table 4*. For a complete understanding of each criterion, we included an example of the MMAT in Appendix 1.

Discussion

This is the first study exploring the reasons why patients declined H@H and the sociodemographic characteristics of these patients. In our analysis, we identified that motives for declination could be related to four major topics: concerns and lack of knowledge about the H@H model itself, characteristics of patients' homes, presence and relationships with family or caregivers, and idiosyncratic or psychological concerns. The six most common individual reasons were present in more than one paper, showing that these are shared among patients receiving H@H in different institutions worldwide. Additionally, each of them belongs to a different major type of concern.

We identified that among our studies, only two had the main purpose of analyzing the reasons and predictors for refusing H@H (26,28). The remaining identified these reasons by analyzing predictors for accepting a home-based care model (25,27,29) or the barriers and facilitators towards its implementation (30,31). Most information available presents the point of view of patients wanting to provide their experience after having positive results, and little attention is given to those who refused to receive care at home. Patients' perceptions of H@H models have been analyzed in studies assessing their efficacy. Additionally, further studies have focused on analyzing patients' and caregivers' perceptions (18,19). It is crucial to understand what patients are experiencing with this new care model in order for the H@H model to succeed. Developing patient-centered care models such as H@H should provide care that the patient needs, in the manner the patient desires (16). To do that, we need a full understanding of patients' perceptions and experiences.

Concern and lack of knowledge about the H@H model itself

Fear that a home-based hospital would not be enough to take care of their current needs (27), either because they felt too sick to go home (28,29) or because they would not trust remote care (25,31), was the most prevailing reason for refusing H@H. These findings are consistent with those in additional studies analyzing patients' perceptions after being treated at home. There, patients worried about the availability of skilled professionals (32) and concerned about H@H meeting their care needs if their condition was worse, even to the point of preferring treatment at the hospital (18,23,33). Since the patients in this review have never received H@H care, their concerns, particularly this one, might correlate to the perception of their illness, home characteristics, regular habits, external support, or simply lack of knowledge and misinformation about this model. In one study, the unfamiliarity with H@H models led patients to falsely unqualify themselves for home care because of the

Table 2 Reasons for declining

Different reasons	Studies (n)	Patients (n)
Concern that H@H would meet care needs (25,27-29,31)	5	74
Concern that home is unsafe (25,27-29)	4	25
Prefers in-hospital care (26,28,31)	3	78
Physician advised against (26-28)	3	34
Concern about burdening family (25,28,31)	3	25
No reason provided (27,28)	2	69
Concern about getting visitors (privacy issues) (27,30)	2	16
Wish for medical aid in-sight (31)	1	22
Discomfort with monitoring technologies (31)	1	21
Inconvenience for family members (27)	1	11
Other reasons (not specified) (28)	1	10
Perception of insufficient social support at home (27)	1	7
Could not reach caregiver (28)	1	7
Desire to keep home habits the same (26)	1	7
No caregiver present (29)	1	5
Fear of being alone when unwell (30)	1	5
Imminent discharge (27)	1	5
No response captured (28)	1	5
Concern about keeping up with home responsibilities (26)	1	5
Too much disturbance at home (26)	1	5
Caregiver needs respite (27)	1	4
Unfamiliarity with H@H (26)	1	4
Misinformation related to H@H (26)	1	4
Unwell family members at home (30)	1	3
Facility time constraints (28)	1	3
Concern about getting family members sick (27)	1	2
Extra blood tests (29)	1	1
Extra outpatient appointments (29)	1	1
Needs to consult PCP before agreeing (27)	1	1

H@H, hospital-at-home; PCP, primary care physician.

perceived severity of their disease. Other patients believed that recuperation at home would take longer and declined H@H (26). Nevertheless, patients also expressed confidence in the care service provided and a sense of safe treatment at home (8,19,23,27,30-39).

Lack of knowledge about home-based models also prevailed among physicians. Several patients reported declining because their physician advised against H@H (26-28). Most cases were due to emergency medicine or outpatient doctors being unaware of the details of the home care model (26) or because they felt uncomfortable with the idea of home hospitalization (28), regardless of the severity

of the patient's condition. In an independent study analyzing stakeholders' perceptions toward H@H, physicians were concerned about the medicolegal implications if patients deteriorate at home (8). In one of the studies, this was significantly associated with the enrollment at their rural site, where physicians misinformed patients about H@H characteristics and advised against it (26). This problem underscores the importance of further collaboration and awareness among emergency medicine, outpatient, and H@H health providers.

Table 3 Patient demographics

Different characteristics	Studies (n)
Enrollment location (26,28,31)	3
Married/partnered (25,28)	2
Higher risk of adverse outcome (25,26)	2
Number of ER visits or hospital admissions during the past year (25,28)	2
Admission diagnosis (27)	1
Number of medications (25)	1
Presence of caregiver (25)	1
Income (31)	1
Age (27)	1
Female (27)	1
Insurance (27)	1
Comorbidity count (28)	1
Language other than English (26)	1
Familiarity with patient portal (26)	1
Q2 2021 admission (26)	1
No statistically significant differences found/provided (29,30)	2

ER, emergency room.

Concerns related to patients' homes

The perception of having an untherapeutic or unsafe home was shared among patients from 4 different articles (25,27-29). In Jimenez *et al.*' study, patients who declined H@H care expressed that either their homes' structural or logistical conditions prevented the home model's adequate implementation (25). This was consistent with examples provided by other patients, where they reported having insect infestations (28) or risky infrastructure, such as steep stairs (29).

Paulson *et al.* identified additional challenges related to being treated at home (26). Patients perceived that the intrusiveness of H@H in their daily home life would complicate their healing process. They identified as a barrier having to focus on sticking to hospital-based protocols while still having to manage their family and keep up with their home habits and responsibilities. These concerns were especially prevalent in female patients who felt that having to take care of their family while at home was more of a priority than staying in bed.

Despite the claims of patients previously treated at H@H programs that they experienced disruption in their daily routines (35), some preferred home hospitalization and stated the opposite. Some studies reported that the main reasons given by H@H acceptors were related to their home environment, including comfort, proximity to family, maintaining family roles, and ability to keep up with their routine following their own rhythm (8,18,19,27,30,32-34,40). In an additional study, patients preferred home treatment

Table 4 Mixed Methods Appraisal Tool (MMAT), version 2018 results

Design	Study	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5
Qualitative	Dismore LL *et al.* (30)	Y	Y	Y	CT	CT
Qualitative	Saenger P *et al.* (27)	Y	Y	Y	Y	CT
Quantitative RCT	Collins AM *et al.* (29)	Y	Y	Y	N	Y
Quantitative non-randomized	Jiménez S *et al.* (25)	Y	CT	Y	CT	N
Quantitative non-randomized	Lai YF *et al.* (31)	Y	Y	Y	CT	N
Mixed methods	Levine DM *et al.* (28)	Y	Y	Y	Y	Y
Mixed methods	Paulson N *et al.* (26)	Y	Y	Y	Y	Y

Y, yes; N, no; CT, cannot tell; RCT, randomized controlled trial.

because it allowed them to continue caring for their family regardless of undergoing treatment or being ill (40).

Social support and relationship with family and caregivers

In a similar fashion, reasons for declining H@H treatment were intrinsic to the relationships patients had at home. If patients were not worried about taking care of their families, they were concerned about burdening them with the care they would require (25,28,31). Additionally, patients declined because H@H would be inconvenient for their family members or because they needed some respite at the moment (27). Decliners would also report having sick family members at home (30) or worrying about getting them sick (27).

In a meta-analysis of 61 RCTs from five continents, the authors found that H@H increases caregiver satisfaction without affecting carer burden (6). This correlates with findings that carers perceived less stress with home care (19,36,41) and more lifestyle disruption with inpatient staying (30). However, recent studies also show that patients who were taken care of at home still were concerned about burdening their families (8,19,35,40) and potentially harming their relationship with their caregivers (42,43).

Conversely, being alone was another important barrier to accepting H@H. The absence of a caregiver (29) or the perception of insufficient social support at home (27) were determinants for refusing treatment at home. On top of that, the fear of being alone when unwell was the most common declination reason for the patients in one study (30). This concern was also described by patients receiving H@H care, especially at night. In one study, patients rated the care received at night when they were alone as worse (18), and in another, patients reported feeling afraid of being left alone at night (23).

Some demographic characteristics were also consistent with the importance of having external support. One study identified being married and having a caregiver as statistically significant differences between acceptors and decliners, with acceptors being more likely to be married or have a caregiver (25). Furthermore, one study found that having a partner was a significant difference and a predictor for declining enrollment in a H@H model (28).

Idiosyncratic or psychological concerns

Seventy-eight patients from three different studies preferred in-hospital care without concise reasons. Some vague motives mentioned were that they were comfortable staying at the hospital and moving would represent an unnecessary effort (28,31). Some patients did not provide further explanations for this preference (27). Additional discomforts, such as extra blood tests and outpatient appointments, were enough reasons to avoid a H@H program (29).

Privacy concerns, such as dealing with non-related personal issues or the appearance of their homes, were further reasons for patients to refuse H@H (26,27,30). Some patients felt uneasy about the prospect of continuous remote monitoring throughout the day (31), a discomfort that was shared with patients who have received home-based care (18,19,32,33,35). Contrastingly, some patients refused because they wished to have medical aide in sight (31).

Sociodemographic characteristics of refusers

Only one study identified demographic predictors for declining: site of enrollment and absence of a partner (28). Two additional studies identified enrollment sites as a significant difference between acceptors and decliners. Although declination was associated with rural or community sites in the 3 studies, the authors provided different explanations for this, such as cheaper costs (31), more bed availability (28), and physician misinformation about H@H (26). Not having a partner or a caregiver was also associated with declination, but no specific reason for this was identified. Those without partners may have less support at home; however, many unpartnered older adults are cared for by their families or have other caregiver arrangements. Interestingly, in their H@H program, Leff *et al.* reported that a greater proportion of patients who refused have a family member who takes care of them (44).

Several demographic characteristics were associated with the overall severity of the disease, such as the risk of an adverse outcome (25,26), number of ER visits and hospital admissions (25,28), diagnosis (27), number of medications (25), and comorbidity count (28). Although in 2 studies, a higher risk of an adverse outcome was a significant demographic difference between acceptors and decliners, in one study, it was associated with acceptors (25), while in the other, it was associated with decliners (26). In the latter, the severity of the disease also amplified the challenges perceived at home, which made patients decline home-based treatment. Similarly, patients with more emergency visits in the previous year were more likely to accept H@H (25), while patients with a hospital admission in the previous six months were more likely to decline (28).

Patients who refused H@H had higher comorbidity counts (28) and admission diagnoses such as diverticulitis, acute kidney injury, and hypertensive urgency as compared to acceptors who had less severe diagnoses like urinary tract infections (UTI) or dehydration (27). In an additional study, patients treated at home and with worse scores on the mental state domain of the clinical chronic obstructive pulmonary disease (COPD) questionnaire were less likely to prefer H@H again (18). On the other hand, in Federman *et al.*' study, patients treated at home were more likely to have one or more preacute functional limitations (15). Counterintuitively, patients taking fewer medications were more likely to decline (25).

Whereas no specific reason was determined for these differences, this could also be related to how patients perceive their condition and their confidence in their capability to heal. This suggests that H@H acceptance depends more on the psychological perceptions of the patient than on the characteristics or severity of the disease (25). Patients with more negative or anxious thoughts and feelings are less confident that they will be able to manage at home, especially when they are alone (18). Conversely, patients who are better able to manage their symptoms and difficulties will more often choose home treatment (8,18,19,23,30-33,35,39).

Even though no economic reasons for declination were provided, one study from Singapore identified that patients with lower economic levels were more likely to accept (31). In their review, Wang *et al.* identified that H@H costs were perceived as facilitators for acceptance (19). Conversely, additional research from the Asian population showed that patients had contrasting views about the costs of H@H where some considered it should be lower, but others would be willing to pay more (35). Another study identified that stakeholders are concerned about the affordability and insurance coverage for home hospitalizations (8).

Recommendations for future research

Understanding the reasons why patients decline H@H treatment is essential for this model's complete and pervasive adoption. However, we noticed that not only are there a limited number of studies aiming to identify these reasons, but they are also reported heterogeneously. In this study, we stated four major categories or generalizable reasons for H@H rejection, in which most of the patient motives can be included:

- Concerns about and lack of familiarity with H@H: include reasons that made patients doubt the capability of these models to meet their care needs, including lack of information and misinformation from patients and caregivers.
- Concerns related to patients' homes: these include reasons related to the perception of having an untherapeutic home, either because of a lack of hygiene, accessibility, or the inability to set up necessary medical equipment. This category can include the perceived intrusiveness and disruption of daily life at home.
- Social support and relationship with family and caregivers: any motives that arise primarily from the presence or absence of family and caregivers and the possible consequences to the relationship with them.
- Psychological and idiosyncratic concerns: these include reasons related to patients' beliefs and specific preferences. Some of these cannot be attributable to any characteristic of the H@H model.

By standardizing their categorization, future studies can better compare, analyze, and address patient declination.

Limitations

Although this is the first study analyzing patients' reasons for declining H@H, our work has certain limitations. The number of studies that met our inclusion criteria is small, and most studies did not focus on the reasons for declination but rather on the characteristics of the patients who accepted. This limits the boundaries to which we can analyze the true drivers for H@H refusal. Additionally, our search strategy may have inadvertently excluded relevant studies where patient refusal was reported as part of a broader effectiveness study rather than the primary focus. This could have further restricted the pool of studies for analysis. However, by screening the reference lists of the included articles, we ensured that we included potentially missed papers.

Notably, we did not identify any significant differences between the reasons for declining in real and hypothetical scenarios. Nevertheless, it is important to recognize that patients' motives in the latter may not accurately reflect their actions in a real setting. While most studies conducted structured or semi-structured interviews, the time and mode of retrieval may have affected what patients decided to answer. Some answers might be subjective to circumstantial characteristics such as the interviewing environment, the interviewer, and their trust in them. Some patients may have limited their responses because they wanted to avoid shame, sharing personal reasons, or

confrontation. Moreover, most studies had a very small sample size and were limited to single institutions, which limits the generalizability of their answers.

Conclusions

This systematic review presented the most common reasons that lead patients to refuse H@H among different hospitals, H@H models, and countries. We identified that neither reason nor demographic characteristic was strictly associated with refusal, as they could be related to patients who declined and accepted H@H. A lack of knowledge regarding this care model could be either a facilitator or a barrier to acceptance, and patients' psychological factors and auto-perception may determine how they see it. More effort is needed to ensure that patients and healthcare providers fully understand what H@H models entail. Additionally, further research exploring the relationship between specific demographic characteristics is paramount for better understanding and predicting what leads a patient to decline. This could make H@H models more accessible to those who may benefit from it.

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Footnote

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