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Can a crisis resolution team replace an inpatient ward? Results from a French quasi-experimental study

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Abstract

Background Though promising, the implementation of crisis resolution teams has been unequal across Europe. In France, their deployment is currently receiving interest but there is to date no national policy and the research is scarce.

Methods In the present study a psychiatric service converted one of its two inpatient wards into a crisis resolution team (EPSIAD) enabling a quasi-experimental naturalistic design. Variables on admissions, length of hospital stay and patient satisfaction were collected and analysed in the year preceding and the year following the conversion.

Results In the year following the EPSIAD implementation, there were more admissions of female patients (41.0% vs 49.5%, $p = 0.0262$), a five-day decrease in the length of hospital stay ($p < 0.0001$) and increased patient satisfaction, with a particular increase in clarity of information, quality of the relationship with the care staff and service and feeling involved in medical decisions ($p < 0.0001$).

Conclusions The results of the present study indicate that the combination of a hospital ward with a crisis resolution team has the potential to increase global quality of care by providing a complementary mental health service. Crisis resolution teams may provide a viable alternative to hospitalisation that increases patient satisfaction and allows new patients to receive intensive care, with women especially benefiting from care at home. There is a need to cater for patients refusing psychiatric care altogether and hospital inpatient wards might specialise in involuntarily-admitted patient care.

Keywords Crisis resolution team, Home treatment, Satisfaction, Length of hospital stay, Involuntary admissions, Access to mental health care, Acute psychiatric care, Community mental health service

Background

Crisis resolution teams are an alternative to inpatient hospitalisation and aim to improve quality of care for patients experiencing a mental health crisis by intervening in their everyday environment. This outreach approach is one of the main objectives for mental health services outlined by the World Health Organisation [1]. Recent reviews including randomised controlled trials, non-randomised comparative and non-comparative studies have shown that the implementation of crisis

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resolution teams have repeatedly lead to a reduction in hospital admissions whilst providing similar clinical outcomes as in-treatment [2–4]. Furthermore, several studies have shown increased patient satisfaction for care at home [5–7]. Despite these promising results, the implementation of crisis resolution teams has been unequal throughout Europe.

One of the main explanations for this disparity is the different national policies which encourage or hinder the development of crisis resolution teams. For example, 335 crisis resolution teams were created in the UK by the National Health Service (NHS) in 2005 to cover the entire country following a national reform on mental health [8]. Belgium, Germany and Norway are other examples of European countries with national policies, frameworks and organisations which encourage the development and implementation of crisis resolution teams, although unequal access to crisis resolution teams may persist on a national level and funding of crisis resolution teams may differ greatly between countries [9–12]. Even the definition of a crisis resolution team can vary amongst countries and even within countries as is currently the case in France [13]. However, the CORE fidelity scale developed in the UK gives a clear description of the key components of crisis resolution teams and is now also being applied in other countries [9, 14–16].

In France, the deployment of crisis resolution teams is currently receiving interest and rapidly increasing in certain regions. However, there is to date no national policy guiding their implementation and the research is scarce, mostly limited to local evaluation reports [17, 18]. For example, the recent review on crisis intervention teams mentioned above concludes that the quality of the research in this field is moving upwards in the hierarchy of evidence, but of the 137 studies included in the review, only one was conducted in France and was published over 15 years ago [2, 19].

In the present study, a hospital ward was converted into a crisis intervention team in the Pôle 4 of the Jury Psychiatric Hospital in North-Eastern France (EPSM Metz-Jury). At the time of study, this service covered the mental health needs of a geographic area representing 120 300 inhabitants, including patients with addictions and geriatric psychiatry.

Patient satisfaction is usually cited as an argument supporting crisis resolution teams but it seldom measured, partly due to the lack of specific scales to measure satisfaction in crisis resolution teams [20]. However, the literature establishes a link between patient satisfaction and important health outcomes such as adherence, compliance and persistence [21]. The present study aims to evaluate the effect of converting a hospital ward into a crisis

resolution team on patient satisfaction, with a particular focus on patient-centred care.

Methods

Intervention

The crisis resolution team, called EPSIAD, closely follows the CORE good practice guidelines [15] and is a four-week intervention in which the frequency of home visits is tailored to the patient's needs and progressively decreases. In line with what is offered in the inpatient ward, EPSIAD is composed of a multidisciplinary team of psychiatrists, nurses, health assistants and educators as well as a social worker, psychologist and case manager. All patients in need of intensive psychiatric care can be referred to the crisis resolution team with the exception of patients with a high suicidal risk, patients with a high risk of aggressive behaviour, homeless patients and patients refusing care. The crisis resolution team accepts referrals from all sources, the initial evaluation is conducted by phone and a face-to-face interview is organised within the next 48 h to confirm admission, otherwise the patient is referred to a different type of care. The crisis resolution team conducts a comprehensive assessment and provides individualized care including: providing information and support to patients and their wider social network, reviewing and prescribing medication for all service users when needed, delivering psychological interventions, helping service users with social and practical problems and addressing their other health needs. Home visits are organised every day of the week and 24 h/7 support is put in place though a direct line to the hospital ward outside of opening hours.

Design

A quasi-experimental design was used to compare several quality indicators of patient mental health before and after the change: hospital admissions, length of stay in the remaining ward, rate of involuntary admissions and patient satisfaction. The analysis compares two study periods: the year preceding the conversion of a hospital ward to a crisis intervention team, 1–09–2020 to 31–08–2021, and the year following, 1–10–2021 to 30–09–2022. In the first study period, Period 1, the service comprised two inpatient wards with a total capacity of 40 beds. In September 2021, the staff members of these two wards were reassigned either to the new inpatient ward or the EPSIAD crisis intervention team. In the second study period, Period 2, the service comprised one inpatient ward with a capacity of 20 beds and EPSIAD with a capacity of 20 patients. To avoid potential confounding factors linked to the reorganisation of staff, September 2021 is not included in the analysis. Patients were included in the study if they were admitted to the

service within each of the two study periods and if they were released up to two months following the end of each study period (31–10–21 for Period 1 and 30–11–22 for Period 2). There were no exclusion criteria, as patients not suited to the home intervention received care in the inpatient ward. Patient characteristics, length of stay and legal status at admission are routinely recorded and were obtained from the hospital patient database. Patients are legally admitted with a voluntary status or involuntary status.

Measure of satisfaction

Patient satisfaction was collected using a French validated 26 item questionnaire on quality of care – EQS-H [22]. This questionnaire was chosen as it was general enough to evaluate satisfaction in different contexts: in hospital or at home. Patient satisfaction was collected from 01–01–2021 to 31–08–2021 in Period 1 and during the entire duration of Period 2 (1–10–2021 to 30–09–2022). In order to increase response rate, several members of the evaluation team were trained to aid in questionnaire completion. In order to reduce desirability bias, the evaluator for each patient was selected so that he or she was not the main person responsible for delivering care. The questionnaire was completed in the few days preceding or following discharge. All items were compared independently. The first set of questions relate to clarity of information regarding: symptoms, reasons for undergoing medical examinations, results of these examinations, treatment objective, undesirable effects of treatment, activities that can be pursued at discharge, symptoms that should act as a warning and continuity of medical follow-up after discharge. The second set of questions relate to quality of patients’ relationship with the care staff and service and includes the following items: respect of intimacy, atmosphere in the service, service organisation, nurse availability, help received with everyday tasks, ease to identify the doctor responsible for care, ease of access to a nurse, help to relieve pain. Three other items of particular interest to evaluate quality of care were: patient implication in medical decisions, global evaluation of care received and health improvement at discharge. Two questions unrelated to quality of care are also included. The first is an evaluation of the patients’ health in relation to their same-age peers and the second is a general life satisfaction score ranging from 1 (very dissatisfied) to 7 (completely satisfied).

Analysis

For inter-group comparisons, Chi-square or Fisher exact tests were used for categorical variables and Student t-test or Wilcoxon-Mann-Whitney test were used for discrete and continuous variables depending on

normality. All analyses were performed using SAS 9.4 Software.

Results

General patient characteristics and admission rate

Overall, more patients were admitted in Period 2 (396 vs 293) but there were fewer hospital admissions (245 vs 293). In Period 2, there was an increase in the proportion of admissions of female patients (41.0% vs 49.5%, $p=0.0262$). No significant difference in age was observed with a median age of 44,0 in Period 1 ($Q1=33$, $Q3=56$) and 42,0 in Period 2 ($Q1=32$, $Q3=54,0$). In Period 2 specifically, there was a significant difference in gender, with patients admitted in the crisis resolution team being more likely to be female than those admitted in hospital (62,9% females admitted in the crisis resolution team vs 41,2% females admitted in hospital, $p<0.0001$) with no difference in age (median 45,0 $Q1=31,0$ $Q3=57$ for patients admitted in the crisis resolution team and 42,0 $Q1=32,0$ $Q3=53,0$ for those admitted in hospital).

Legal status at admission

As shown in Table 1, there was a significant increase in the proportion of voluntary admissions in Period 2 compared to Period 1 (52.0% vs 36.2%, $p<0.0001$).

The number of involuntarily admitted patients was nearly identical in both periods (187 in Period 1 vs 190 in Period 2). However, there was a notable increase in voluntarily admitted patients in Period 2 (106 vs 206). The proportion of involuntarily admitted patients in the remaining inpatient ward increased to 72.6% in Period 2 whilst the proportion of involuntarily admitted patients in both wards in Period 1 was 63.8%.

In Period 1, patients admitted voluntarily were older with a median age of 48.5 ($Q1=38$, $Q3=59$) as compared to 42,0 for involuntarily admitted patients ($Q1=29,0$, $Q3=45,0$) ($p<0.01$) with no difference in gender (54.7% males for voluntary admissions and 61.5% males for involuntarily admissions) (see Table 2).

Table 1 Comparison of voluntary admissions before and after EPSIAD implementation

Period 1			Period 2		p*
N = 293 (42,5%)			N = 396 (57,5%)		
N	%				
Voluntary admission					
Yes	106	36,2	206	52,0	<.0001
No	187	63,8	190	48,0	

* Chi-2 test

Statistical support, Facilit-R

Table 2 Patient characteristics based on voluntary admission in Period 1

	Yes				No				
	N = 106 (36,2%)				N = 106 (36,2%)				
	N	%/med*	Q1	Q3	N	%/med*	Q1	Q3	p**
Sex									0,2568
Male	58	54,7			115	61,5			
Female	48	45,3			72	38,5			
Age at admission	106	48,50	38,00	59,00	187	42,00	29,00	54,00	0,0097

* Median

** Chi-2 test or Fisher exact test for qualitative variables, Wilcoxon test for quantitative variables

Statistical support, Facilit-R

In Period 2, patients admitted voluntarily were more likely to be female (59.7% female voluntary admissions vs 38.4% female involuntary admissions $P < 0.001$) with no difference in age (median age 45.0 Q1=32.0, Q3=57.0 for voluntary admissions and 41.0 Q1=31.0, Q3=51.0 for involuntary admissions) (see Table 3).

A specific comparison of involuntarily admitted patients between periods showed no difference in age (median age 42.0 Q1=29.0 Q3=54.0 in Period 1, median age 41.0 Q1=31.0 Q3=51.0 in Period 2) or gender (61.5% males in Period 1, 61.6% males in Period 2).

Taken together, these results suggest that although the proportion of involuntary admissions decreased, the number of involuntary admissions was identical in both periods and these patients had the same socio-demographic profile. However, the conversion of an inpatient ward to a crisis resolution team had an effect on admissions in the service as a whole by allowing additional younger, female and voluntarily-admitted patients to receive care.

Length of stay in hospital

There was a significant reduction in median length of hospital stay: 17 days (Q1=9, Q3=34) in Period 1 and

12 days (Q1=7, Q3=21) in Period 2 ($p < 0.0001$). There was no significant difference in length of care between the two periods when, in Period 2, the number of days patients were admitted in the crisis resolution team is taken into account in addition to the number of days in hospital (median length of care in Period 2 21.0 Q1=9.0 Q3=28.0). Although data for all admissions in the crisis resolution team included in this study are not available, the average number of home visits for the admissions within the four-week treatment in 2022 were: 4.8 in the first week, 2.4 in the second week, 2.0 in the third week and 1.7 in the final week, so a total average of 10.7 days per patient, which is even less than the reduced length of hospital stay in Period 2.

The reduction in length of stay in hospital between Periods 1 and 2 was more notable ($p < 0.001$) for patients admitted involuntarily with a median of 20 in Period 1 (Q1=11; Q3=37) and 12 in Period 2 (Q1=8; Q3=21) as opposed to voluntarily admitted patients with a median of 15 in Period 1 (Q1=9; Q3=27) and 12 in Period 2 (Q1=6; Q3=19) and for which the difference barely reaches significance ($p = 0.044$).

The hospital length of stay was reduced for 7.3% of patients admitted in the hospital unit by transferring the

Table 3 Patient characteristics based on voluntary admission in Period 2

	Yes				No				
	N = 206 (52,0%)				N = 190 (48,0%)				
	N	%/med*	Q1	Q3	N	%/med*	Q1	Q3	p**
Sex									< .0001
Male	83	40,3			117	61,6			
Female	123	59,7			73	38,4			
Age at admission	205	45,00	32,00	57,00	190	41,00	31,00	51,00	0,1522

* Median

** Chi-2 test or Fisher exact test for qualitative variables, Wilcoxon test for quantitative variables

Statistical support, Facilit-R

patient to the crisis resolution team. In 55.2% of these transfers, legal status changed from involuntary to voluntary admission. Conversely, a hospital transfer was necessary for 2.6% of patients admitted in the crisis resolution team on clinical grounds.

Satisfaction

In the embedded study, 101 questionnaires were completed before the introduction of the crisis resolution team within Period 1 and 139 questionnaires in Period 2, with a response rate of 46.3% and 35.1% respectively. In Period 2, questionnaire completion was more frequent in the crisis resolution team than the inpatient ward (47.0% vs 27.8%, $p < 0.0001$). Four patients refused to answer the questionnaire, 6 were unable to answer because they did not speak French and 7 were unable to answer for clinical reasons (lack of cognitive ability, dementia, inability to concentrate). Results on satisfaction comparing both periods are presented in Table 4.

Of the 8 questions relating to clarity of information, 5 were significant of which 3 relate to information given at the beginning of care (information regarding symptoms, examinations, examination results, treatment objective) and 2 relate to information at discharge (activities that can be undertaken at discharge, symptoms that should act as a warning). There was no significant difference for the items concerning reasons for undergoing medical examinations, undesirable effects of treatment and continuity of medical follow-up after discharge. Of the 8 questions relating to relationship with staff and service, 5 were significant (respect of intimacy, atmosphere in the service, service organisation, nurse availability, help received with everyday tasks), 3 were non-significant (ease to identify the doctor responsible for care, ease of access to a nurse, help to relieve pain). There was also a significant improvement in the implication of patients in medical decisions with 59.1% of patients in Period 2 responding “always” and “almost always” as opposed to 29.3% in Period 1 ($p < 0.0001$). Global evaluation of care received also improved, with 32.6% considering care received as “excellent” in Period 2 as opposed to 16.8% in Period 1 ($p = 0.01$). There was no significant difference in health improvement at discharge, with above 50% of patients considering an important improvement in health at discharge both in Period 1 (52.6%) and in Period 2 (55.7%). There was also no difference in two questions unrelated to quality of care: comparing the patients’ health to that of their same-age peers and general life satisfaction.

Discussion

The conversion of an inpatient ward to a crisis resolution team had multiple consequences on the service as a whole and the remaining inpatient ward.

Hospital admissions and length of stay

As has been repeatedly found in the academic literature, the introduction of a crisis resolution team reduced the number of hospital admissions [2, 19, 23–28]. Considering that the total number of admissions in the service increased, this result suggests that providing an alternative to hospitalisation is an acceptable option for many patients in need of intensive psychiatric care and does not reduce total admission capacity. This is certainly made possible by the five-day reduction in the median length of hospital stay, allowing more patients to be cared for in the remaining ward for shorter lengths of time. Similar to other studies, although the hospital length of stay decreased, when the total length of the crisis resolution team intervention is taken into account, there is no longer a significant difference in the service as a whole [27]. However, given that the average days of home visits is even less than the reduced length of hospital days, it could be argued that home treatment services are more efficient than inpatient care. The service reorganisation therefore did not reduce the amount of care given to patients but rather improved the quality by reducing time in hospital and providing a longer period of care at home but with fewer days of care, depending on patient needs. However, the length of stay was particularly reduced for patients admitted involuntarily and over 50% of transfers from hospital to home treatment concerned involuntarily admitted patients. Furthermore, the length of stay in hospital after the service reorganisation was identical for voluntarily and involuntarily admitted patients, whilst there had previously been a 5-day median difference, suggesting that the option for home treatment may allow the optimisation of length of stay.

The crisis resolution team also seemed to be efficient in responding to patients in need of intensive care as a hospital transfer was necessary in less than 3% of admissions. This seems to be lower than other settings where hospital admission cannot be avoided during the treatment period [29–32]. These results suggest that the combination of a hospital ward with a crisis resolution team allows a complementary mental health service to be provided which increases the quality of care by reducing both the number of hospital admissions and their length of stay.

Population change

A notable consequence on the service as a whole is the change in the type of patient receiving care despite the population pool being identical. More patients were admitted with a particular increase in the voluntary admission of younger female patients. These extra female admissions were concentrated in the crisis resolution team. These results suggest the format of at-home psychiatric care is particularly adapted to female patients,

Table 4 Patient satisfaction before and after EPSIAD implementation

	Period 1				Period 2				
	N= 293 (42,5%)				N= 396 (57,5%)				
	N	%/med*	Q1	Q3	N	%/med*	Q1	Q3	p**
Clarity of information regarding symptoms									0,0435
Bad	8	8,3			3	2,3			
Average	18	18,8			17	12,9			
Good	37	38,5			52	39,4			
Very good	25	26,0			35	26,5			
Excellent	8	8,3			25	18,9			
Clarity of information regarding reasons for undergoing medical examinations									0,1975
Bad	6	6,4			2	1,7			
Average	10	10,6			7	6,0			
Good	37	39,4			45	38,5			
Very good	26	27,7			35	29,9			
Excellent	15	16,0			28	23,9			
Clarity of information regarding the results of these examinations									0,0180
Bad	13	13,7			3	2,5			
Average	16	16,8			17	14,2			
Good	32	33,7			43	35,8			
Very good	21	22,1			29	24,2			
Excellent	13	13,7			28	23,3			
Clarity of information regarding treatment objective (medication, operations)									0,0339
Bad	8	8,5			7	5,4			
Average	13	13,8			10	7,7			
Good	32	34,0			44	33,8			
Very good	29	30,9			31	23,8			
Excellent	12	12,8			38	29,2			
Clarity of information regarding undesirable effects of treatment									0,0613
Bad	16	17,4			16	12,6			
Average	20	21,7			15	11,8			
Good	29	31,5			43	33,9			
Very good	19	20,7			27	21,3			
Excellent	8	8,7			26	20,5			
Ease to identify the doctor responsible for care									0,1009
Bad	8	8,3			5	3,8			
Average	14	14,6			13	9,8			
Good	27	28,1			31	23,3			
Very good	26	27,1			35	26,3			
Excellent	21	21,9			49	36,8			
Respect of intimacy									0,0029
Bad	8	8,3			4	3,0			
Moyenne	10	10,4			7	5,3			
Good	36	37,5			33	24,8			
Very good	23	24,0			35	26,3			
Excellent	19	19,8			54	40,6			
Help received with everyday tasks									0,0416
Bad	3	4,3			1	0,9			
Average	10	14,5			4	3,4			
Good	18	26,1			37	31,6			
Very good	22	31,9			41	35,0			
Excellent	16	23,2			33	28,2			

Table 4 (continued)

	Period 1				Period 2				
	N = 293 (42,5%)				N = 396 (57,5%)				
	N	%/med*	Q1	Q3	N	%/med*	Q1	Q3	p**
Help received to relieve pain									0,8671
Bad	4	4,3			2	1,5			
Average	5	5,4			6	4,6			
Good	21	22,6			28	21,5			
Very good	21	22,6			34	26,2			
Excellent	14	15,1			20	15,4			
I did not have any pain	28	30,1			40	30,8			
Ease of access to a nurse									0,8528
Bad	2	2,1			1	0,8			
Average	5	5,2			5	3,8			
Good	19	19,8			31	23,7			
Very good	36	37,5			48	36,6			
Excellent	34	35,4			46	35,1			
Service organisation									0,0128
Bad	4	4,2			1	0,8			
Average	9	9,5			5	3,8			
Good	36	37,9			35	26,3			
Very good	25	26,3			46	34,6			
Excellent	21	22,1			46	34,6			
Atmosphere in the service									0,0006
Bad	9	9,4			3	2,3			
Average	17	17,7			6	4,5			
Good	26	27,1			36	27,1			
Very good	25	2,0			44	33,1			
Excellent	19	19,8			44	33,1			
Nurse availability									
Bad	2	2,1			0	0,0			
Average	11	11,5			5	3,8			
Good	22	22,9			30	22,6			
Very good	35	36,5			40	30,1			
Excellent	26	27,1			58	43,6			
Clarity of information regarding symptoms that should act as a warning in future									0,0100
Bad	15	15,8			8	6,1			
Average	8	8,4			20	15,3			
Good	38	40,0			37	28,2			
Very good	24	25,3			39	29,8			
Excellent	10	10,5			27	20,6			
Clarity of information regarding activities that can be pursued after discharge (work, sport)									<,0001
Bad	20	21,5			7	5,5			
Average	16	17,2			15	11,7			
Good	33	35,5			36	28,1			
Very good	19	20,4			44	34,4			
Excellent	5	5,4			26	20,3			
Clarity of information regarding continuity of medical follow-up after discharge									0,0631
Bad	5	5,3			4	3,1			
Average	5	5,3			12	9,2			
Good	39	41,5			32	24,6			
Very good	28	29,8			49	37,7			

Table 4 (continued)

	Period 1				Period 2				
	N = 293 (42,5%)				N = 396 (57,5%)				
	N	%/med*	Q1	Q3	N	%/med*	Q1	Q3	p**
Excellent	17	18,1			33	25,4			
I was involved as much as I wanted in the medical decisions that concerned me									<,0001
Very rarely, never	7	7,6			13	9,8			
Sometimes	35	38,0			16	12,1			
Often	23	25,0			25	18,9			
Almost always	15	16,3			21	15,9			
Always	12	13,0			57	43,2			
Overall, the care I recieved was...									0,0141
Bad	2	2,1			2	1,5			
Average	16	16,8			10	7,6			
Good	35	36,8			35	26,5			
Very good	26	27,4			42	31,8			
Excellent	16	16,8			43	32,6			
Has your health improved as a result of your hospitalisation/care at home ?									
NO	10	10,5			9	6,9			
YES, a bit	35	36,8			49	37,4			
YES, a lot	50	52,6			73	55,7			
Compared to people of your age, your state of health seems									0,4562
Worse	24	25,5			44		33,1		
Similar	41	43,6			54		40,6		
Better	29	30,9			35		26,3		
Are you currently satisfied with your life in general (outside your hospitalisation)? (from 1 = not satisfied at all to 7 = fully satisfied)	95	4,00	3,00	6,00	133	5,00	4,00	6,00	0,1008

* Median

** Chi-2 test or Fisher exact test for qualitative variables, Wilcoxon test for quantitative variables

Statistical support, Facilit-R

a finding which has previously been found in the literature [7, 33–35]. Future analyses need to be carried out in order to ascertain how these new admissions affect the clinical profile of patients receiving care in terms of diagnosis criteria.

Crisis resolution teams may therefore be important for ensuring equitable access to psychiatric care.

Involuntary admissions

One of the objectives for the improvement of quality of care was to reduce involuntary admissions. Although the proportion of involuntary admissions decreased significantly in the service as a whole, the total number was identical before and after the introduction of the crisis resolution team. Furthermore, these patients had the same socio-demographic profile. These results suggest that despite providing an alternative type of care, there is a need to cater for patients refusing psychiatric care altogether. Indeed, a repeated finding on the effects of crisis

resolutions teams is the lack of reduction of involuntary admissions [5, 25, 36].

Since the total number of hospital admissions decreased but the number of involuntary admissions remained the same despite the closure of an inpatient ward it is unsurprising that the proportion of involuntarily admitted patients in the remaining ward increased to nearly three quarters of admissions. This has a direct implication for the remaining inpatient ward with a higher concentration of more complex patients to treat, as has previously been highlighted in the literature [34].

Taken together, these results suggest that when different options of psychiatric care are provided, the hospital inpatient ward might specialise in involuntarily-admitted patient care.

Satisfaction

In line with other studies of crisis resolution teams [7, 20, 23, 25, 29], the results of this study suggest increased

satisfaction in the service as a whole after the introduction of the crisis resolution team. There is an important increase in clarity of information, relationship with care staff and service, implication in medical decisions and global satisfaction, indicating increased quality of care following the implementation of a crisis resolution team in the service.

Interestingly, ease of access to a nurse was not reduced, despite the fact that nurses in the crisis resolution team are not on-site and available 24 h/7 as is the case in a hospital ward, and perceived nurse availability even increased. These results indicate that being physically present is not the most important criteria impacting perceived level of support by care staff. The fact that subjective nurse availability increased suggests that the lower staff continuity which is often reported in crisis resolution teams was not a barrier to acceptability of the home treatment intervention [37].

Many non-significant results relate to medical aspects of care: results of examinations, treatment effects, identifying the doctor responsible for care, and medical follow up. This suggests that the perceived increased support and general satisfaction did not compensate the lack of resources in terms of medical staff, which were present before and after the conversion of the hospital ward into a crisis resolution team.

Strengths and limitations

The main strength of this quasi-experimental study is the fact that the crisis resolution team was not added to an existing service but was the fruit of service reorganisation with no additional resources. The population pool and consequent psychiatric needs were constant and the study is therefore undertaken with routine data and conditions, reducing the potential gap between research and practice. However, a main methodological bias inherent to the study design is the fact that the unit of analysis is admissions rather than patients. Patients may therefore be admitted multiple times in the same study period and disproportionately influence the results but this is representative of routine conditions in a psychiatric service. Furthermore, when a patient is transferred between the crisis resolution team and the inpatient ward or inversely, two admissions are counted, which partly explains the increase in admissions observed in Period 2.

In terms of satisfaction, a main limitation is the response rate, below 50%, suggesting a potentially high selection bias. However, the fact that among the 240 received questionnaires only 4 were not completed because of patient refusal suggests that the missing questionnaires are not linked to patient characteristics but rather organisational difficulties. Indeed, choosing to have a member of the evaluation team present to aid in questionnaire completion

did not have the desired effect of increasing response rate, conditioning instead questionnaire completion on the availability of the evaluation team member. For example, when patient discharges were decided on the day, this did not allow an evaluation team member to be present and these patients were consequently not given the questionnaire. The fact that there was no significant difference in the questions unrelated to quality of care also suggests that the observed improvement in satisfaction is not due to patient-related factors. Another potential bias relating to satisfaction is that in Period 2, there was an overrepresentation of patients from the crisis resolution team completing the questionnaire compared to the inpatient ward. This affects the result of increased satisfaction in the service as a whole in Period 2, which in all likelihood is mostly attributable to the increase in satisfaction with care at home.

Future research must evaluate the consistency of quality of care in the remaining inpatient ward, despite the increased proportion of complex patients and shorter length of stay. More research is also needed to evaluate the effect of increasing the diversity of care options on longer-term criteria such as readmission rates and clinical outcomes. On a global level, the various models of intensive home treatment teams in mental health such as crisis resolution teams, FACT teams, Inpatient Equivalent Home Treatment or other types of crisis interventions such as Patient-Initiated Brief Admission would benefit from increased clarity to allow for better comparability [12, 38, 39]. The recent use of the CORE fidelity scale outside the UK is an encouraging example and might guide policy makers in the further development of crisis resolution teams in Europe [40].

Conclusions

The results of the present study indicate that the combination of a hospital ward with a crisis resolution team has the potential to increase global quality of care by providing a complementary mental health service. Crisis resolution teams may provide a viable alternative to hospitalisation that increases patient satisfaction and allows new patients to receive intensive care. The present study indicates women especially may benefit from care at home, though these findings should be replicated in different settings. The presence of a crisis resolution team can have knock-on effects on inpatient services including reducing hospital admissions, shortening length of stay and catering for patients refusing care. However, future research must establish whether reducing admissions and length of stay does not have any negative clinical impacts in the remaining ward, and long-term outcomes need to be evaluated. Despite these limitations, this study adds to the body of evidence that crisis resolution teams should be an integral part of a comprehensive mental health care service.

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Authors' contributions

The following substantive contributions were made by the authors: Laura Saez : conception and design of the study, analysis and interpretation of data, drafting of the manuscript Laken Ndjoh Eton : conception and design of the study, acquisition, analysis and interpretation of data Valérie Demessance: conception of the study and acquisition of data Amélie Rundstadler : conception of the study and acquisition of data Emilie Harquet : conception of the study Fabienne Lemetayer : revision of the manuscript Caroline Soler: conception and design of the study, analysis and interpretation of data, revision of the manuscript

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Data availability

The datasets generated and/or analysed during the current study are not publicly available to protect the privacy of research participants but are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

Ethical approval was obtained by the Ethics Committee of the Metz-Jury Mental Health Hospital (Comité éthique de l'Etablissement Public de Santé Mentale Metz-Jury).

This study was conducted in accordance with the Helsinki Declaration and national guidelines.

Waiver of consent for non-interventional research.

According to the French Code de la santé publique (Public health code), as in force at the relevant time, there was no need for informed consent because the research conducted is non-interventional. Thus, the Legislative part of the Public health code, First book on the Protection of persons in the health sector, Title II of which is entitled 'Biomedical research' sets out the rules governing consent. Non-interventional research is defined, in Article L1121-1 (https://www.legifrance.gouv.fr/codes/article_lc/LEGIARTI00003722870/2020-07-21), as 'research ... which poses no risk or force in which all medical acts and products are used routinely'. Whereas for other types of research, explicit and informed consent is necessary, non-interventional research is always permitted unless a person has refused to be the subject of research (Article L1122-1-1, https://www.legifrance.gouv.fr/codes/article_lc/LEGIARTI000032722892/2020-07-21). None of the persons involved in the present study refused being the subject of research.

Consent for publication

Non applicable.

Competing interests

The authors declare no competing interests.

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