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ASSISTED REPRODUCTION TECHNOLOGIES

Patient-centered communication, patient satisfaction, and retention in care in assisted reproductive technology visits

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Abstract

Purpose To explore the association between patient-centered communication, patients' satisfaction, and retention in care in assisted reproductive technology (ART) visits.

Methods ART visits at eight Italian clinics were videotaped and coded using the Roter Interaction Analysis System, which includes a Patient-Centered Index (PCI), a summary "patient-centered communication" ratio. After the visit, patients completed a satisfaction questionnaire (SATQ). After 3 months, patients were asked about their retention in care. Spearman correlations and Mann-Whitney tests were used to test associations between the study variables; the open-ended item of SATQ was analyzed through content analysis.

Results Eighty-five visits were videotaped (involving 28 gynecologists and 160 patients). PCI score ($\mu = 0.51 \pm 0.28$) revealed a more disease-oriented communication during the visit. Patients reported high levels of satisfaction with the visit and identified in the information provision or in the doctor's humanity or kindness the main reasons of satisfaction. At the follow-up, the majority of the couples declared to have followed the clinicians' recommendations and to have remained related to the ART center. No associations were found among the study variables, except for a lower male satisfaction among couples who declared to have changed ART clinic.

Conclusions Contrary to what was expected, the style of physician-patient communication was not found to be associated with patient satisfaction and retention in care. However, patients were highly satisfied and engaged. The actual meaning of a communication that is "patient-centered" in the ART context might be wider, including the couples' need for information, as suggested by qualitative findings.

Keywords Patient-centered communication · Doctor-patient interaction · Satisfaction · RIAS · Assisted reproductive technology · Retention in care

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Introduction

Assisted reproductive technology (ART) is a field that poses various challenges at different levels. Clinically, the treatment success rates are still low, around 30% per cycle [1]; moreover, couples reported high levels of stress due to infertility itself [2, 3] and to the fact that infertility treatments are emotionally and physically demanding [4]. As a consequence, patients often discontinue prematurely [5, 6]. The ART context poses some challenges for the clinicians too: the frequent communication of bad news [7], the triadic nature of the consultation [7, 8], the management of the patients' complaints or distress [9], and the couple's discontinuation [6].

Given these complexities, monitoring the quality of fertility care only through clinical outcome measurements—such as live birth rates—is not sufficient [10]. Similarly to other clinical setting, also in fertility care, patient-centeredness has been recently studied and recognized as one of the key element of quality care [11], despite it is still considered "neglect outcome" [12, 13]. The emerging literature on patient-centeredness in fertility care has focused on patients' preferences and experience, assessed through a validated self-reported questionnaire [13, 14] that has found to be associated with increased patient satisfaction (SATQ) [12, 15] and lower patient anxiety or depression [13]. On the contrary, lack of patient-centeredness is one of the most common reasons for patients to discontinue treatments [6, 13, 16] and to change clinic [17].

The conceptualization of patient-centeredness in the empirical medical literature continues to evolve and expands in a multilevel concept that refers not only to patient preferences, needs, and values [18] but also to patient-centered communication during doctor-patient interaction [19–21]. As far as the doctor-patient interaction, in the last decades, the literature has focused on both non-verbal and verbal communication, with a marked prevalence for verbal communication. A physician-patient interaction in which the communication is defined as "patient-centered" is a clinical consultation in which the doctor elicits and explores patients' feelings, expectations, and illness beliefs, and fosters patients to participate and interact during the medical visit [22]. A large amount of literature supports a positive association between the patient-centered model of communication and patient satisfaction or perceived quality of care [23–28], as well as greater patient's adherence to treatment [25, 29, 30].

However, little is known about the characteristics of doctor-couple communication during ART consultations. The only study exploring in real time how ART physicians communicated with patients during the consultations [31] did not use audio/video-recording, despite it is known to be the best method to study physician-patient communication during visits [32]. The present study aimed at filling this gap of literature. As a part of a larger study on the physician-patient interaction in ART consultations [7], the present study aimed to explore the association between patient-centered communication, patients' satisfaction, and retention in care.

Physician-patient interactions were codified through the Roter Interaction Analysis System (RIAS), a well-validated and widely used quantitative method for coding medical interaction and characterizing patient-centered communication [33]. Specifically, the study aimed at testing the following hypothesis: (1) patient-centered communication was expected to be associated with a higher satisfaction of the couples; (2) patient satisfaction was expected to be linked to a higher chance to be engaged in the care process; and (3) patient satisfaction was expected to be a mediator of the relation between patient-centered communication and successful retention in care.

Materials and methods

Participants

The present study is part of a larger study on doctor-patient communication in ART visits [7]. Participants were recruited from eight Italian ART Centers in Italy, through a convenience sample. All ART patients older than 18 years old were eligible to participate in the study. Patients were excluded if they presented psychiatric problems or were unable to understand Italian. All ART physicians who agreed to participate were recruited. Participants were asked to be videotaped during their ART consultation.

Data collection

Patients were recruited during their visit at the ART centers; consultations can be first or checkup visits. Before the consultation, patients were informed about the aim of the study by two researchers, and patients who accepted to participate signed an informed consent and complete a sociodemographic form. At the moment of the visit, the researcher turned on the video camera in the visiting room (avoiding the clinical examination area) and left the room. At the end of the visit, the patients were asked to confirm the consent to use data for research aims and completed a satisfaction questionnaire to assess the perceived quality of the visit. After 3 months from the visit, patients were contacted by phone for a brief follow-up interview. Physicians signed an informed consent too, completed a sociodemographic form, and provided the patients' clinical information.

Measures

Patient-centered communication during doctor-couple interaction

The videotaped consultations were coded through the Roter Interaction Analysis System (RIAS), a software, with well-documented reliability and predictive validity that systematically codes the verbal medical exchanges [33]. The unit of analysis for RIAS coding is called "utterance" and is defined as a statement reflecting a complete thought or phrase, which may vary in length from a single word to a long sentence. The statements are assigned to mutually exhaustive and exclusive coding categories applied to all speakers. The system includes 37 common patient and clinician coding variables and a few unique patient and clinician codes. The communication categories can be broadly viewed as reflecting task-focused and socioemotional elements of medical exchange. Task-focused exchange includes categories aimed at data gathering (biomedical and lifestyle/psychosocial questions) and patient education and counseling (biomedical and lifestyle/psychosocial information), while socioemotional exchange includes categories aimed at relationship building (emotional, positive, negative, social talk), facilitation, and patient activation.

The RIAS allows to summarize the categories into 10 composite categories for each speaker and to calculate a patient-centered score, which is a ratio of all codes relating to socioemotional and psychosocial elements of exchange (all partnership-building; psychosocial information and counseling; relationship building; positive, negative, and social talk by physicians and patients; all physician open-ended questions; and all patient questions) divided by codes that further the biomedical agenda (the sum of all physician and patient biomedical information and counseling, orientations, and physician closed-ended questions) [33]. The ratio is interpreted as the balance between the patients' lived experience and its expression in emotional, psychosocial, and lifestyle terms and the biomedical paradigm of medicine [34]. A value greater than 1 indicates a more patient-centered encounter, and a value less than 1 indicates a more physician-centered encounter.

Two trained coders coded the consultations half each using RIAS software. A random sample of 12% of the visits, evenly distributed between the two coders, was double coded by a third trained RIAS coder, revealing an inter-rater agreement of 0.8 across the composite categories (range 0.73–0.86).

Patients satisfaction

At the end of consultation, patients completed a questionnaire already used in previous studies [35] to assess their satisfaction with the communication and relational skills of the doctor during the visit, such as the ability to introduce her/himself, to collaborate with the patient, to show interest, and to explain with clear words. The questionnaire was composed of eight items on a 5-point Likert scale (from 1 = poor to 5 = excellent); both female and male patients filled out the questionnaire. A composite score about couple satisfaction was calculated by the mean of the sum scores of both female and male members of the couple. The composite score ranges from 8 to 40, where higher scores indicate a higher level of couple's satisfaction with the visit.

At the end of the questionnaire patients answered to an open-ended question about the reason of their satisfaction/dissatisfaction. In the text, the questionnaire will be abbreviated with the acronyms SATQ.

Retention in care

Retention in care, i.e., remaining connected to medical care, once entered, has been measured in the study from the couple's perspective. Couples were contacted after 3 months by phone and were asked the following closed questions (yes/no answer): (1) Have you followed the clinician's recommendations? (2) Have you continued to be treated in the same ART clinic or have you decide to change?

Data analysis

All the statistical analyses were performed with SPSS 24 for Windows. Descriptive statistics were calculated for demographic and clinical characteristics, communication contents, patient satisfaction, and retention in care outcomes. Spearman correlations were used to analyze relationships between PCI and patients satisfaction. Mann-Whitney tests were used to analyze relationships between patient satisfaction and retention in care, and between PCI and retention in care. The same analyses have been conducted dividing the sample in patients with good or poor prognosis.

The responses to the open-ended questions of the SATQ were transcribed and qualitatively analyzed through content analysis [36]. Two researchers independently read the responses to identify themes, i.e., patterns in the participants' responses that capture something important or interesting about the data. Agreement about thematic content and labeling for the themes was then reached through discussion. Finally, the frequency of the themes was calculated and excerpts of participants' responses were chosen to illustrate each theme.

Ethics

The research project was approved by the Ethical Review Board of the University of Milan and by the Ethical Review Boards of the eight participating ART clinics. Written informed consent was obtained from each participant included in the study, and patients and physicians were guaranteed the

right to withdraw voluntarily if they so decide. Data were managed according to local regulations regarding privacy.

Results

A total of 85 visits were videotaped, of which 49 were first visits and 36 were checkups. None of the checkup visits involved a couple who had been videotaped during the first meeting. Participants were 28 gynecologists and 160 patients, among whom the majority were couples ($n = 75$, 88%). The demographic and clinical characteristics of the participants are shown in Table 1. Couples had unprotected sex for a mean of 3.6 years prior to consultation. Second-level intervention was offered to 61.2% of participants, with a favorable prognosis in 70% of cases.

The average visit duration was 37 min (SD = 17.7). In terms of the communication content, physicians accounted for 64% (mean = 476.6, SD = 271.8) and patients for 36% (mean = 268.4, SD = 148.0) of all consultation statements. The mean of the ratio physician/patient talk was 1.9 (SD = 0.86, range 0.72–5.74). Out of the consultations at which both male and female partners were present, females accounted for 67% of all patient talk. The data on the RIAS composite categories were already published in a previously contribution by Leone et al. [7]. As far as the descriptive characteristics of the study variables, the mean of PCI was 0.51 (SD = 0.18; range = 0.08–1.77). Both females and males reported high scores on the SATQ, respectively $\mu = 4.58$ (SD = 0.46) and $\mu = 4.48$ (SD = 0.58), resulting in a high composite score about couple satisfaction ($\mu = 36.27$, SD = 3.85; range = 26.5–40). After 3 months from the visit, 87% of the couples declared to have followed the clinicians' recommendations, and 81% of the couples declared to have remained in the same ART clinic (10 to 15% of couples were lost or did not respond at the follow-up).

PCI and patient satisfaction

PCI did not correlate with couple's satisfaction ($\rho = 0.077$, $p = 0.524$) nor with female or male satisfaction separately ($\rho = 0.059$, $p = 0.599$ and $\rho = 0.056$, $p = 0.641$, respectively). No associations were found between PCI and couple's satisfaction in the group of patients with good prognosis or in the one with poor prognosis ($\rho = 0.085$, $p = 0.556$ and $\rho = 0.151$, $p = 0.537$, respectively).

Patients satisfaction and patients retention in care

Mann-Whitney tests failed to find associations between patients' satisfaction collected immediately after the consultation and indices of retention in care (Table 2). In particular, couple satisfaction did not differ neither between couples who declare

Table 1 Participant sociodemographic and clinical characteristics

Patient characteristics	Value
Gender, *n* (%)	
Female	85 (53)
Male	75 (47)
Participant age, mean years (SD), range	
Females	36.5 (4.9), 24–49
Males	38.5 (6.7), 24–64
Participant level of education, *n* (%)	
Females	
Elementary school	9 (10.8)
High school	40 (48.2)
Graduate and post-graduate	34 (41)
Males	
Elementary school	10 (13.5)
High school	38 (51.4)
Graduate and post-graduate	26 (30.6)
Consultation type, *n* (%)	
First consultation	49 (57.7)
Check-up consultation[a]	36 (42.3)
Unprotected sex, mean years (SD), range	3.6 (2.8), 0.5–18
Cause of infertility, *n* (%)	
Female factor	23 (27.4)
Male factor	19 (22.6)
Other factors	42 (49.9)
Mixed	17 (20.2)
Idiopathic	17 (20.2)
Not evaluable	8 (9.5)
Previous ART interventions, *n* (%)	
IUI	12 (14.1)
IVF/ICSI	26 (30.6)
Therapeutic indication, *n* (%)	
IUI	12 (14.2)
IVF/ICSI	52 (61.2)
Not recommended	6 (7.1)
Waiting	11 (13.9)
Heterologous (use of donor gametes)	3 (3.6)
Prognosis, *n* (%)	
Favorable	59 (70.2)
Unfavorable	21 (25)
Uncertain	4 (4.8)
Physician characteristics	Value
Gender, *n* (%)	
Female	18(64.3)
Male	10(35.7)
Participant age, mean years, range	
Females	44.3, 26–62
Males	52.4, 41–61
Participant years in practice, mean years, range	
Females	15, 1–34
Males	20.6, 11–30

[a] Checkup consultations included all the visits that were not first visits; check-ups were not follow-up visits for the same couple)

IUI, intrauterine insemination; *IVF*, in vitro fertilization; *ICSI*, intracytoplasmic sperm injection

Table 2 Associations between patient-centered communication, measured by RIAS Patient-Centered Index (PCI), or patients' satisfaction with the visit, and indices of retention in care tested through Mann-Whitney tests

	Follow therapeutic indications				Change clinic			
	Yes Mean (SD)	No Mean (SD)	*U*	*p*	No Mean (SD)	Yes Mean (SD)	*U*	*p*
Patient-Centered Index (PCI)	0.49 (0.29)	0.57 (0.25)	197.0	0.193	0.46 (0.24)	0.62 (0.42)	338.0	0.226
Couples satisfaction	36.8 (3.4)	36.5 (3.5)	167.5	0.621	36.6 (3.9)	34.8 (3.1)	198.0	0.093
Female satisfaction	36.6 (3.6)	38.0 (2.7)	190.0	0.437	36.7 (3.8)	35.9 (3.1)	309.5	0.186
Male satisfaction	36.8 (3.8)	34.9 (4.8)	158.0	0.189	36.3 (4.6)	33.7 (3.9)	187.0	*0.039*

Statistical significance was set at $p < 0.05$ for all comparisons

to have followed the clinicians' recommendations and those who have not ($U = 167.5$, $p = 0.621$) or between couples who declare to remain engaged to the clinic and those who have asked an opinion to another ART center ($U = 198$, $p = 0.093$). Considering female and male satisfaction separately, no association was found between female satisfaction and the indices of retention in care ($U = 190$, $p = 0.437$ for follow therapeutic indications; $U = 309.5$, $p = 0.186$ for change clinic); male satisfaction did not associate with follow therapeutic indications index ($U = 158$, $p = 0.189$), while the decision to change clinic was found to be associated with lower male satisfaction after the visit ($U = 187$, $p = 0.039$). The lack of association between variables have been found also splitting the sample in subgroups of patients with good or poor prognosis. In particular, patient satisfaction and follow therapeutic indications were not associated neither in the good prognosis group ($U = 52$, $p = 0.397$) nor in the poor prognosis group ($U = 22.5$, $p = 0.855$). No associations were found between satisfaction and change clinic ($U = 114$, $p = 0.411$ in the good prognosis subgroup; $U = 11.5$, $p = 0.099$ in the poor prognosis subgroup).

PCI and patients retention in care

Since no associations have been found neither between PCI and patients satisfaction nor between satisfaction and retention in care indices, the mediation model could not be tested. The direct association between PCI and 3-month indices of retention in care were thus tested thorough Mann-Whitney analyses. Mann-Whitney tests failed to find any associations (Table 2). In particular, PCI did not differ neither between couples who declare to have followed the clinicians' recommendations and those who have not ($U = 197$, $p = 0.193$) nor between couples who declare to remain engaged to the clinic and those who have changed ART center ($U = 338$, $p = 0.226$). The lack of association between variables have been found also repeating the same analysis by subgroup. In particular, PCI and follow therapeutic indications were not associated in the good prognosis group ($U = 76$, $p = 0.703$) nor in the poor prognosis group ($U = 30$, $p = 0.327$). The same results were found between PCI and change clinic ($U = 147$, $p = 0.261$ in the good prognosis group; $U = 38$, $p = 0.602$ in the poor prognosis group).

Qualitative findings

Three main themes emerged from qualitative analysis of the open-ended question at the end of SATQ about the reasons of patients' satisfaction. The themes are reported below along with the number of comments belonging to each theme (in parenthesis) and participants' excerpts.

(1) Informative aspects ($n = 104$)

Patients appreciated visits in which they received clear and comprehensive information and in which the doctor was honest and realistic about the treatment possibilities.

> The doctor gave us a clear overview and possible solutions (technical) without hiding possible problems and success rates

> I was fine I had some questions that no one so far had given me

> I need information and clarity in general and in particular, and I think have obtained them

(2) Doctor's characteristics ($n = 36$)

A second reason of satisfaction for patients was associated to the physician's characteristics, in particular: humanity, kindness, and active listening skills.

> We met a doctor, not just a person graduated in medicine

> The doctor was very friendly, it gave us peace of mind and optimism

The doctor transmits peace and reliability, the professionalism of a luminary also depends on this

(3) Emotional aspects ($n = 15$)

This theme dealt with patients emotions during the consultation. Patients expressed their satisfaction in those visits in which they feel that their emotions were taken into account.

I felt at ease

I felt calm and I could speak freely feeling heard and understood

I heard a lot of confidence in his words

Discussion

The aim of the present study was to explore the associations between patient-centered communication, patients' satisfaction, and retention in care in the ART context.

In the present study, Patient-Centeredness Index score ($\mu = 0.51 \pm 0.28$) revealed a more disease-oriented communication approach during the visit. This finding has been discussed in our previous article [7] and might be linked to some specificities of the ART context (e.g., the great amount of information on therapies and procedures essential for medical decisions). Our results showed that both women and men were highly satisfied with the communication during ART visit ($\mu = 4.58 \pm 0.46$ and $\mu = 4.48 \pm 0.58$, respectively). This finding is consistent with other studies in this field [37, 38]. As for retention in care, 13% of patients declared to have dropped out treatment, and 19% declared to have changed ART center. A longitudinal study found a similar percentage of dropout (17.5%), but registered a lower tendency to change clinic (7.8%) compared with our study [39]. The fact that, compared with the literature, a higher percentage of couples have changed center might depend on the great number of existing centers in Italy compared with the rest of the world (in Italy, there are 160 centers of second level, so twice or three times the number of inhabitants compared with other European countries). Moreover, the involved centers are all located in areas with a lot of competition, and patients, once the diagnosis and the indication to ART treatment have been confirmed, sometimes choose another center for a shorter waiting list or lower costs (e.g., public versus private centers).

Contrary to our hypothesis, no significant correlation has been found between patient-centered communication and patients' satisfaction with the visit. Our results also failed to find associations of both patients' satisfaction and PCI with the retention in care indices. That is, neither global style of the doctor-patient interaction nor patient satisfaction with the visit seems to be related to the couple engagement in the care process, with the exception of a lower male satisfaction among couples who declared to have changed ART clinic. The lack of correlation between PCI and satisfaction is in contrast with the literature on chronic diseases [25, 26] and with the preliminary literature of patient-centeredness in fertility care [17, 40].

Despite a lack of association with doctor-patient communication, our data revealed that couples were highly satisfied with the visit. It may be questioned what determines such a high satisfaction of couples with the visit at the end of the consultation, if it is not the doctor-patient interaction. Two cautionary notes should be introduced regarding satisfaction: first, patients' satisfaction has been collected immediately after the visit and thus might be affected by a social desirability bias; moreover, satisfaction scores are skewed towards the mean of the distribution, which is quite high.

Besides these considerations, a possible explanation is provided by the qualitative finding of our study that revealed that the main reasons of couple satisfaction with the visit referred to the informative aspects of treatment and to the physician's characteristics (humanity, kindness, and active listening skills). The RIAS allows to capture the verbal components of doctor-patient communicative behaviors; however, patient perception may be ascribed also to other aspects of the interaction, such as non-verbal behaviors, that are not included in the RIAS index of patient-centeredness.

The need for exhaustive and clear information and a good relationship with the doctor (in terms of good manner of caring, communication skills, rapport-building, and a good sense of humor) were also found in different studies [3, 31, 41] as the major reported needs or reasons of satisfaction in ART visits. Moreover, as suggested by Mead and Bower [42], a key aspect might be the theoretical framework linking patient-centered care (and specifically some of its dimensions) with specific outcomes (e.g., satisfaction). The authors suggested that, for example, satisfaction might be better predicted by the clinician's attention to the "therapeutic alliance" than to "sharing power and responsibility" or to the adoption of a "biopsychosocial perspective" [42].

Taken together, our findings open to some considerations. First, our data calls for a reflection about the definition of patient-centered communication in the ART context. As abovementioned, a key issue is the theoretical framework of what is intended for "patient-centered" communication. In our study, we referred to the definition of patient-centered communication as the balance between biomedical and socioemotional communication contents verbally expressed both by clinician and patients during the medical consultation, which was operationalized through the RIAS PCI. It is possible that this definition does not perfectly fit with the ART context. Going back to a broader definition, conducting a

patient-centered conversation actually means open the so-called agenda [43], or, in other words, taking into account the patient's ideas, desires, and needs [44], which in the case of ART have been found to be particularly focused on receiving information and having the possibility of sharing decision-making [45]. Pedro et al. [46] underlined that patients may be more willing to comply with treatment if physicians provide them with the information they need. One hypothesis is that information provision might be highly appreciated by patients' as it may improve their awareness of the clinical pathway, decreasing concerns about medical procedures and increasing couples' well-being [11]. Moreover, our previous study [7] highlighted that patients themselves were highly focused on biomedical aspects and little on the emotional contents.

Second, the definition and measurement of patients' satisfaction with the visit might have critical aspects. Besides the already cited problem of social desiderability, patient satisfaction might not be the best indicator about the care process in the ART context, as it could be more strongly affected by the actual clinical outcome than other contexts of chronic disease. So, what are the factors responsible for such a high satisfaction? Future studies should further investigate this area.

Thirdly, our findings showed that ART patients are highly engaged in the care. However, this seems not to be related neither to the physician-patient communication during the consultation nor to the couple's satisfaction, despite a lower male satisfaction was found among couples who declared to have changed ART clinic. This finding is new and calls for a replication in future studies; if confirmed, it opens to some reflection on the involvement of male patients during ART visits. The lack of association between the physician-patient communication and the retention in care outcomes calls for reflections. Caution about the findings on retention in care should be highlighted because of the potential overestimation bias of retention in care outcomes due to the dropout of a non-marginal percentage of couples. Moreover, the measurement of retention in care should be improved, including also "objective" or clinical indicators. Our study included a self-report measurement of retention in care, capturing only a partial aspect of retention in care that is a more complex phenomenon. For example, in the ART context, dropping out from treatment might be considered negative outcome but it might also be the result of a thoughtful decision of the couple, based on a well-informed choice [39]. Patients could choose to stop treatment because of low chance of pregnancy or to change clinic for a different type of treatment that could better fit with their clinical situation. Future research should address this topic defining retention in care in ART setting and developing a proper measurement tool.

The data already published belonging from the same research project [7] showed a difference in PCI index by treatment advice (higher for heterologous fertilization) and doctor's gender (higher with women). Accordingly, association between patient-centeredness communication and outcome measures, as satisfaction and retention in care, could be affected by specific characteristic of the couple (infertility history, prognosis, reproduction outcome) or of the doctor. However, our sample is actually too small to run such complex analyses with multiple variables; future research should investigate this topic using a larger sample.

Finally, our findings on retention in care might be partially related to the peculiar Italian ART context; future studies should consider the role of factors such as the type of the clinic (public vs private) or the waiting lists. Our findings call for replication also in other countries, health care system, and/or cultures in order to verify the generalizability of this study.

In conclusion, the present study addressed an important and well-known topic in the literature that has not been explored in the ART context yet. Future research should explore the convergence of doctor-centered communication and patient-centered care, intended as the patients' preferences and experience of care, in the fertility setting.

Compliance with ethical standards

The research project was approved by the Ethical Review Board of the University of Milan and by the Ethical Review Boards of the eight participating ART clinics. Written informed consent was obtained from each participant included in the study, and patients and physicians were guaranteed the right to withdraw voluntarily if they so decide.

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