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Pain and anxiety during bone marrow aspiration/biopsy: Comparison of ratings among patients versus health-care professionals

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Abstract

Purpose: To assess pain and anxiety during bone marrow aspiration/biopsy (BMA) among patients versus health-care professionals (HCPs).

Method: 235 adult hematologic patients undergoing BMA were included. BMA was performed by 16 physicians aided by nine registered nurses (RNs). Questionnaires were used to obtain patients and HCPs ratings of patients' pain and anxiety during BMA. Patterns of ratings for pain and anxiety among patients HCPs were estimated with proportions of agreement P(A), Cohen's kappa coefficient (κ), and single-measure intra-class correlation (ICC). We also explored if associations of ratings were influenced by age, sex, type and duration of BMA.

Results: The P(A) for occurrence of rated pain during BMA was 73% between patients and RNs, and 70% between patients and physicians, the corresponding κ was graded as fair (0.37 and 0.33). Agreement between patients and HCPs regarding intensity of pain was moderate (ICC = 0.44 and 0.42). Severe pain (VAS > 54) was identified by RNs and physicians in 34% and 35% of cases, respectively. Anxiety about BMA outcome and needle insertion was underestimated by HCPs. P(A) between patients and RNs and patients and physicians regarding anxiety ranged from 53% to 59%. The corresponding κ was slight to fair (0.10–0.21). ICC showed poor agreement between patients and HCPs regarding intensity of anxiety (0.13–0.36).

Conclusions: We found a better congruence between patients and HCPs in pain ratings than in anxiety ratings, where the agreement was low. RNs and physicians underestimated severe pain as well as anxiety about BMA outcome and needle insertion.

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Conflict of interest

None of the authors have any financial or personal relationship with other persons or organizations that could inappropriately influence the work reported here.

Keywords

Bone marrow aspiration; Pain; Anxiety; Agreement; Health-care professionals; Patient

Introduction

Patients with cancer undergo several different and repeated diagnostic procedures during the disease trajectory. Pain caused by various procedures and situations is defined as procedural pain, i.e. an acute increase or sudden onset of pain with short duration (Heafield, 1999). Among the most painful procedures are those when instruments or devices are inserted into the body, usually by cutting or puncturing the skin (Coutaux et al., 2008). In a recent study, pain was evaluated in cancer patients undergoing different types of invasive examination. The highest pain levels were related to the procedures bone marrow aspiration/biopsy (BMA), lumbar puncture and insertion of central venous catheter (Portnow et al., 2003).

BMA is commonly performed in hematological patients to confirm diagnosis and to evaluate response to therapy. In adult patients, local infiltration anesthesia is routinely applied before BMA (Kuball et al., 2004). Previously, we conducted a prospective longitudinal study on procedure-related pain among adult hematologic patients who underwent BMA (Liden et al., 2009). Similar to prior studies (Dunlop et al., 1999; Vanhelleputte et al., 2003; Kuball et al., 2004; Steedman et al., 2006), we found BMA-related pain to be common: 70% of the patients reported pain during BMA and 35% reported severe-to-worst-possible pain (Liden et al., 2009).

Reasons for not preventing pain related to BMA may depend on health-care professionals' insufficient knowledge of procedural pain, or on inadequate pain analysis (Field, 1996; Drayer et al., 1999; Sjostrom et al., 1999; Puntillo et al., 2003). Another possible barrier to efficient pain treatment may be poor congruence of the ratings for pain among patients versus health-care professionals (Drayer et al., 1999). Health-care professionals' estimates of cancer patients' pain commonly diverge from the patients' own experience (Grossman et al., 1991; Sneeuw et al., 1999; Kuball et al., 2004; Budischewski et al., 2006). Health-care professionals seem to overestimate mild pain and underestimate severe pain (Grossman et al., 1991; Kuball et al., 2004; Budischewski et al., 2006). Anxiety often co-exists with and exacerbates the perception of pain (Ozalp et al., 2003). A poor correlation between cancer patients' and health-care professionals' assessments of anxiety is also reported (Badner et al., 1990; Heikkila et al., 1998; Martensson et al., 2008).

Although poor agreement between patients' and health-care professionals' ratings of cancer patients' pain and anxiety is recognized, to our knowledge, there is limited empirical research focusing on procedures. Procedures are often associated with considerable discomfort and pain (Portnow et al., 2003) why such knowledge would be of value for adequate symptom management. The aim of the present study was to assess ratings for pain and anxiety during BMA among patients versus health-care professionals. Also we explored whether patterns of ratings were influenced by the patients' age or sex, as well as the type and duration of BMA.

Methods and material

Subjects

Two hundred thirty-five (median age 62 years, range 20–89 years) of 263 (89.4%) consecutive adult patients scheduled for BMA at the outpatient clinic of the Division of Hematology, Karolinska University Hospital, were included (Table 1). Patients could only be enrolled once. Inclusion criteria were age 18 years or older and with a scheduled BMA. Exclusion criteria were mental disorders and linguistic difficulties, unwillingness to participate, not showing up on time for the BMA, sedative medication, or fainting before BMA. Informed consent was obtained from all patients prior to study enrollment. The study was approved by the Regional Ethics Committee in Stockholm.

The BMAs were performed by nine attending hematologists and seven hematology fellows (female n = 10, male n = 6). Twenty-six percent of the BMAs were performed by attending hematologists and 74% by hematology fellows. Seven out of nine attending hematologists and six out of seven hematology fellows had performed more than 100 BMAs previously. Nine RNs assisted the physicians during the BMAs. All the RNs were female with a median of four years (range 1-19 years) of professional experience.

Bone marrow aspiration/biopsy

As pain relief, a local anesthetic (Lidocaine 1% 10–20 ml) was given subcutaneously as well as with periostal infiltration. After local anesthesia, BMA was carried out using a 15 gauge \times 2.7 inch aspiration needle and/or 11 gauge \times 4 inch biopsy needle (Medical Device Technologies, Inc).

Data collection

Self-administered questionnaires were used to obtain information about pain and anxiety from the patients (Liden et al., 2009) and to assess physicians' and RNs impressions of patients' experience of pain and anxiety.

Questionnaires to patients

Prior to the BMA, the patients answered a study-specific questionnaire including questions concerning anxiety about BMA needle insertion and BMA outcome. First, the presence or absence of anxiety was recorded. Thereafter the intensity of anxiety was scored on Visual Analog Scales (VAS) ranging from 0 to 100 mm anchored 0 mm = no anxiety and 100 mm = worst possible anxiety. The participants were requested to mark the point on each line that best agreed with their experience of anxiety.

Ten minutes after the BMA, a second study-specific questionnaire about pain during the procedure was completed by the patients. First, presence or absences of pain was recorded. Then, the intensity of pain was scored on VAS with 0 mm = no pain and 100 mm = worst possible pain. Intensity > 30 mm on VAS was considered to represent moderate pain and VAS > 54 mm severe pain (Collins et al., 1997).

Questionnaires to physicians and registered nurses

The physicians performing the BMAs and the assisting RNs individually filled out a questionnaire immediately after completion of each BMA. They recorded their assessments of the patient's pain during the BMA, anxiety about the needle insertion and anxiety about the outcome (presence or absence and intensity on VAS), without knowing the patients' responses in the patient questionnaires. Using a standardized data-entry form, physicians and RNs also recorded their own gender, and the number of years working in hematology. Physicians also recorded the estimated number of BMAs they had carried out, as well as clinical information regarding the patient.

Statistics

Associations of ratings for occurrence of pain and anxiety during BMA among patients versus health-care professionals were assessed using proportions of agreement P(A) and Cohen's unweighted kappa coefficient (κ), correcting for the eventuality that agreement could occur by chance alone. In accord with Landis and Koch (1977), the magnitude of the κ values was graded as follows: κ 0 = poor; κ 0.01–0.20 = slight; 0.21–0.40 = fair; 0.41– 0.60 = moderate; 0.61–0.80 = substantial; and 0.81–1.0 = almost perfect agreement. Using the McNemar test we tested for marginal homogeneity between ratings of occurrence of pain and anxiety among patients versus health-care professionals (McNemar, 1947; Maxwell, 1970). A significant value implies that the health-care professionals either under- or overestimated the patients rating. Agreement between the patients' and the health-care professionals' scoring of intensity of pain and anxiety by using VAS was evaluated with single-measure intra-class correlation (ICC) (Shrout and Fleiss, 1979). Based on the literature, ICC values were graded as follows: <0.4 = poor agreement; 0.4–0.74 = moderate agreement; 0.75-1 = good agreement (Shrout and Fleiss, 1979; Fleiss, 1986). We further explored associations of ratings for pain and anxiety during BMA among patients versus health-care professionals, by age of the patient (below/above 60 years), sex (female/male), type of BMA (bone marrow aspiration, bone marrow biopsy, or both), and duration of BMA (below/above 15 min). The level of all statistical tests was set at 0.05. The statistical calculations were done with the Stat View 5.0.1 and SPSS 14.0 software.

Results

Agreement of occurrence and intensity of pain, between patients and health-care professionals

The P(A) for rated occurrence of pain during BMA among patients versus RNs was 73%; and among patients versus physicians the P(A) was 70%. The corresponding κ -values were 0.37 and 0.33, respectively; these were both graded as fair (Table 2). For cases where the BMA took more than 15 min, the κ -value for the rated occurrence was graded as moderate (Table 2).

Agreement on rated intensity of pain was graded moderate between patients and RNs (ICC = 0.44) and patients and physicians (ICC = 0.42), respectively (Table 2). Agreement regarding rated intensity of pain was moderate among RNs and physicians for patients with an age of

60 years or younger, for male patients, when bone marrow biopsy was performed alone or together with aspiration, and when BMA took > 15 min (0.42-0.60) (Table 2).

Severe pain (VAS > 54) reported by patients was identified by RNs and physicians in 34% and 35% of cases, respectively (Figs. 1 and 2). Two patients scored worst possible pain, without being observed by an RN in one case or a physician in the other. Moderate pain (VAS >30 to 54) reported by patients was identified to 18% by RNs and 26% by physicians (Figs. 1 and 2). Mild pain (VAS 30) reported by patients was identified to 78% by RNs and 58% by physicians. Six RNs and ten physicians scored an intensity of pain (median VAS 16 (range 3–56), VAS 20 (range 3–69), respectively) in patients who did not report occurrence of pain.

Agreement between patients and health-care professionals on occurrence and intensity of anxiety for BMA outcome

The P(A)s for occurrence of anxiety for BMA outcome between patients and RNs and patients and physicians were 56% and 55%, respectively. The corresponding κ was graded as slight (0.19 and 0.14). κ appeared fair between patients and RNs when both biopsy and aspiration was performed and when BMA took more than 15 min (0.29 and 0.33) and between patient and physicians when bone marrow aspiration was performed (0.28). κ was slight for the remaining variables (0.02–0.17) (Table 3). RNs and physicians significantly (p < 0.01) underestimated anxiety about BMA outcome (Table 3).

The ICC showed poor agreement of rated intensity of anxiety for BMA outcome between patients and health-care professionals. ICC demonstrated moderate agreement among physicians and patients with an age of 60 years or younger (0.46). In all other analyzes regarding age, sex, type of BMA and BMA duration the ICC was in the poor range (-.01 to 0.38) (Table 3).

Agreement between patients and health-care professionals on occurrence and intensity of anxiety about needle insertion

The P(A)s between patients and RNs and patients and physicians for rated occurrence of anxiety about needle insertion were 53% and 59% respectively. The corresponding κ was graded as slight and fair. Between patients and RNs, κ appeared fair when both biopsy and aspiration were performed (0.23). Between patients and physicians, the following variables were fair; patients' age > 60 years, when bone marrow aspiration was performed, when bone marrow biopsy was performed, and when the BMA took more than 15 min (0.22–0.23). κ was slight for the remaining variables (Table 4). Health-care professionals significantly (p < 0.001) underestimated patients' anxiety regarding needle insertion (Table 4).

ICC demonstrated poor agreement between patients and health-care professionals regarding intensity of anxiety about needle insertion. ICC demonstrated moderate agreement between physicians and patients with an age >60 years, when both biopsy and aspiration were performed and when BMA took >15 min (0.41–0.50). In all other analyses regarding age, sex, type of BMA and BMA duration the ICC was in the poor range (0.10–0.40).

Discussion

Overall we found a discrepancy in ratings of occurrence of pain between patients and health-care professionals. Furthermore, our results showed low agreement on rated anxiety about the BMA outcome and needle insertion; and that both RNs and physicians underestimated patients' pain and anxiety. These finding are novel and of major importance because incongruence in ratings and in particular underestimation of patients' experience of pain and anxiety during BMA may lead to unnecessary suffering for patients.

In our study, the level of agreement for rated pain by patients and health-care professionals during BMA was graded as fair. In a prior study by Kuball et al. (2004) the level of agreement between patients and physicians was graded as moderate. We were unable to further assess underlying causes of these discrepancies and we have speculated that they may be due to differences in patient populations and/or health-care professionals. The rating for intensity of pain during BMA among patients versus health-care professionals was graded moderate. Importantly, in accord with the literature (Grossman et al., 1991; Harrison, 1991; Curtiss, 2001; Kuball et al., 2004), the occurrence of severe pain (>54 mm on VAS), present in 32% of the patients, was recognized by the RNs and physicians only in one third of the affected patients. Indeed, underestimation of severe pain, including procedural pain, appears to be common in a variety of patient care settings (Grossman et al., 1991; Harrison, 1991; Curtiss, 2001; Kuball et al., 2004). Prior studies have suggested that underestimation of severe pain could depend on RNs' and physicians' working experience, where those with longer experience have been found to underestimate the pain more frequently than do those with less experience (Choiniere et al., 1990; Marquie et al., 2003). As pointed out previously, a difference with regard to ratings of pain among patients and health-care professionals might depend on that the two groups relate to different experience when scoring pain (Gollop, 1986; Levin et al., 1998). For example, while the patient refers to his/her personal prior pain experience, a health-care professional relates both to his/her personal prior pain experience as well as the range of pain among prior patients (Gollop, 1986; Levin et al., 1998). We found better agreement for the rated occurrence of pain between patients and health-care professionals when, e.g., the BMA took more than 15 min, suggesting that staff might expect a longer BMA to be more painful since such BMAs may often be associated with procedure-related problems. Another proposed factor that influences the evaluation of rated pain among patients and health-care professionals is that health-care professionals sometimes believe some patients to exaggerate the severity of their pain (Drayer et al., 1999) while they sometimes believe that other patients act as they have to endure some pain (Idvall, 2002) and therefore ignore its intensity.

The diagnosis of cancer causes the patient anxiety and stress, which are due to the patients' perception of cancer, its manifestations, and treatment (Ozalp et al., 2003; Degen et al., 2010). Indications for BMA include the diagnosis, staging and therapeutic monitoring of the disease. Most patients with hematological malignancies must undergo repeated BMAs (Bain, 2001; Degen et al., 2010). Anxiety about the diagnostic outcome of the BMA increases the patients' experience of pain during BMA (Liden et al., 2009). To our knowledge, our study is the first systematic investigation of rated anxiety by BMA outcome conducted by patients, RNs and physicians. We found that patients expressed anxiety about

the BMA outcome more frequently and much more intensely than the RNs and physicians were able to identify. Previous studies on anxiety and depression in hospitalized patients with cancer have also reported poor-to-slight agreement between cancer patients' and staff's ratings of anxiety (Lampic et al., 1996). Some studies observe that staff tends to overestimate anxiety and emotional distress (Faller et al., 1995; Lampic et al., 1996; Heikkila et al., 1998; Lampic and Sjoden, 2000; Martensson et al., 2008) whilst others have found that this is not the case (Badner et al., 1990; von Essen, 2004). It has been suggested that poor skill in identifying patients' anxiety may be because staff lack the time to discern the patients' emotional distress; but also that patients do not express their anxiety (Radwin, 1996; Kruijver et al., 2006).

Regarding anxiety over needle insertion, we found poor-to-slight agreement between patient and health-care professionals. Both RNs and physicians strongly underestimated patients' anxiety here. In the literature, needle anxiety is well known among patients with diabetes, those undergoing dental procedures and those on intravenous chemotherapy (Hamilton, 1995; Mollema et al., 2001; Kettwich et al., 2007). Needle anxiety can be traced back to an adverse experience with needles in health-care. A bad experience can lead to a generalized, learned, negative response to different needle procedure (Marks, 1988). Most patients with blood cancer undergo intensive chemotherapy, venepunctures, lumbar punctures and repeated BMAs. Their attitude should be assessed, as the development of needle anxiety may cause delay or avoidance of appropriate medical care.

The main methodological strengths of the present study are the large sample size and the high response rate. Further, the physicians and RNs were blinded to the patients' ratings of pain and anxiety. However, one limitation is that we compared small staff samples with a larger patient sample. Differences between individual RNs and physicians such as personal characteristics may thus have influenced the results. On the other hand, the intention was to investigate the overall agreement between patients, RNs and physicians, not how individual RNs and physicians assess patients' pain and anxiety during BMA. Further, the timing when our questionnaires regarding anxiety were completed diverged between patients, RNs and physicians. Thus, all the patients answered the anxiety questions prior to the BMA while the staff responded to these items immediately after each. This could have influenced the congruence regarding anxiety. However, only this method of distributing the questionnaires was considered feasible, since the staff member's first meeting with the patient was in the consulting room where the BMA was performed.

The discrepancy between the patients' perception of pain and the health-care professionals' assessment can be a predictor of poor pain management (Curtiss, 2001). Pre-existing pain and anxiety about the diagnostic outcome of BMA or needle insertion have been found to be independent risk factors for increased pain experience during BMA (Liden et al., 2009). It is therefore of major interest to take account of the patient's self-assessment of pain and anxiety. Today, we know that procedure-related pain may have other consequences than patients' acute pain (Wincent et al., 2003). There is growing evidence that unrelieved acute pain can generate chronic pain (Kehlet et al., 2006), and pain perception can be intensified if accompanied by anxiety (Kain et al., 2000; Ozalp et al., 2003). Thus, it is urgent to develop

staff knowledge regarding pain and anxiety assessment, conduct analyzes and document patients' pain and anxiety related to BMAs.

In conclusion, we found a discrepancy between patients and health-care professionals ratings of occurrence and intensity of pain during BMA. In ratings of anxiety the agreement was even lower. A slightly better congruence between patients and health-care professionals was observed when the BMA included a biopsy or when the BMA took more than 15 min. Our results also show that both RNs and physicians underestimated severe pain reported by the patients. Moreover, the health-care professionals underestimated the anxiety for needle insertion and BMA outcome patients experienced. Results from this study emphasize the need for adequate symptom assessment. As pain and anxiety are subjective, patients' own reports are the most valid measures of the experience. They can easily be obtained by asking patients to quantify their pain and anxiety before and after undergoing a procedure.

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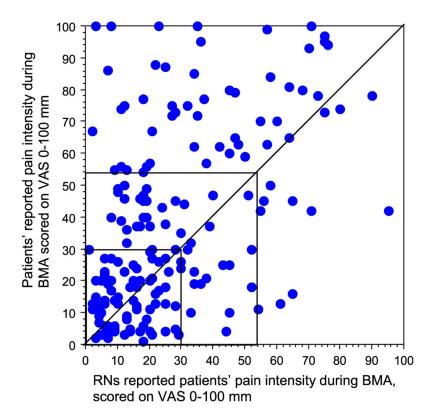


Fig. 1. Intensity of pain during BMA. Data of 185 patients/185 RNs ratings who both reported that patient experienced pain during BMA. Intra-Class Correlation (ICC) 0.44 and 95% confidence interval (CI) 0.27–0.58.

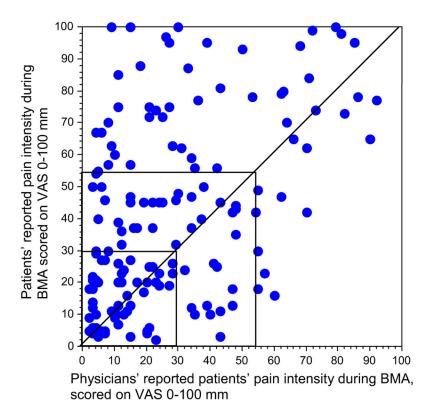


Fig. 2. Intensity of pain during BMA. Data of 156 patients/156 physicians' ratings who both reported that patient experienced pain during BMA. Intra-Class Correlation (ICC) 0.42 and 95% confidence interval (CI) 0.23–0.56.

Table 1

Patients' characteristics.

Variable		
Total number, n (%)	235	(100)
Age, median years (range)	62	(20-89)
Sex, <i>n</i> (%)		
Female	109	(46)
Male	126	(54)
Underlying diagnosis according to BMA, $n(\%)$		
Leukemia	34	(14)
Multiple myeloma	39	(17)
Lymphoma	46	(19)
Myelodysplastic syndrome	18	(8)
Chronic myeloproliferative disorder	31	(13)
Other hematologic disease	42	(18)
Non-hematologic disease	25	(11)
Previous BMA, n (%)		
No previous BMA	100	(43)
1–2 times	76	(32)
3–5 times	27	(11)
>5 times	32	(14)
Site of BMA, $n(\%)$		
Posterior iliac crest	230	(98)
Sternum	5	(2)
Type of BMA, $n(\%)$		
Bone marrow aspiration	67	(28)
Bone marrow biopsy	88	(37)
Both aspiration and biopsy	80	(35)

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Table 2

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234 73% 0.37 0.614 185 30 (1-100) 108 78% 0.34 0.540 90 30 (2-100) 126 69% 0.35 0.200 95 27 (1-100) 109 70% 0.10 0.296 88 36 (1-100) 125 76% 0.46 0.855 97 27 (2-100) 80 81% 0.39 0.838 67 20 (3-100) 66 64% 0.16 0.540 52 38 (3-100) 66 64% 0.31 0.606 66 31 (1-100) 80 81% 0.51 0.606 66 31 (1-100) 181 69% 0.31 0.350 0.453 142 45 (1-99) 50 86% 0.55 0.453 142 45 (1-99) 107 70% 0.25 0.216 78 36 (3-100) 1127 70% 0.37 0.256 78 36 (3-100) 125 69% 0.31 0.850 55 (3-100) 109 72%	Variable	u	$P(A)^d$	Kappa	McNemar ^c	VAS, n	Patient VAS, median (range)	Nurse/physician, median (range)	$_{p}^{CC}$	95% CI
nts age Oyears 108 78% 0.34 0.540 90 30 (1–100) Oyears 108 78% 0.34 0.540 90 30 (2–100) Oyears 108 78% 0.34 0.540 90 30 (2–100) Oyears 108 78% 0.34 0.540 90 30 (2–100) Oyears 109 70% 0.10 0.296 88 36 (1–100) Of BMA Of BMA Or BMA	Pain during BMA									
nts age O years 108 78% 0.34 0.540 90 30.2-100) male 1126 69% 0.35 0.200 95 27 (1-100) male 1127 76% 0.46 0.855 97 27 (2-100) piration 5 min 9 yand aspiration 5 male 1127 70% 0.31 0.350 41 25 (2-100) O years 1127 70% 0.33 0.073 1.42 45 (1-99) O years 1127 70% 0.35 0.216 78 37 (2-100) O years 1127 70% 0.35 0.216 78 37 (2-100) O years 1127 70% 0.35 0.216 78 37 (2-100) O years 1127 70% 0.35 0.012 78 37 (2-100) O years 1127 70% 0.35 0.012 78 37 (2-100) O years 1127 70% 0.35 0.012 78 36 (3-100) O years 1127 70% 0.35 0.012 78 36 (3-100) O years 1128 69% 0.35 0.012 78 36 (3-100) O years 1129 69% 0.31 0.850 873 82 28 (3-100) O years 1129 69% 0.31 0.850 85 25 (3-100) O years 1129 69% 0.31 0.850 85 25 (3-100) O years 1129 69% 0.31 0.850 85 25 (3-100) O years 1129 69% 0.31 0.850 85 25 (3-100) O years 1129 69% 0.31 0.850 85 25 (3-100) O years 1129 69% 0.31 0.850 85 25 (3-100) O years 1129 69% 0.31 0.850 85 25 (3-100) O years 1129 69% 0.31 0.850 85 25 (3-100) O years 1129 69% 0.31 0.850 85 25 (3-100) O years 1129 69% 0.31 0.850 85 25 (3-100) O years 1129 69% 0.31 0.850 85 25 (3-100) O years 1129 69% 0.31 0.850 85 25 (3-100)	Nurse, total	234	73%	0.37	0.614	185	30 (1–100)	20 (1–100)	0.44	(0.27-0.58)
O years 108 78% 0.34 0.540 90 30 (2-100) O years 126 69% 0.35 0.200 95 27 (1-100) male 109 70% 0.10 0.296 88 36 (1-100) ule 125 76% 0.46 0.855 97 27 (2-100) of BMA 125 76% 0.16 0.296 88 36 (1-100) ppsy 88 73% 0.39 0.838 67 20 (3-100) ppsy and aspiration 80 81% 0.51 0.606 66 31 (1-100) during BMA 50 86% 0.55 0.453 142 45 (1-99) during BMA 50 86% 0.55 0.453 142 45 (1-99) during BMA 107 70% 0.33 0.073 156 36 (2-100) o years 107 70% 0.35 0.216 78 36 (2-100) del 125 69% </td <td>Patients age</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Patients age									
oyears 126 69% 0.35 0.200 95 27 (1–100) male 109 70% 0.10 0.296 88 36 (1–100) of BMA 125 76% 0.46 0.855 97 27 (2–100) piration 66 64% 0.16 0.540 52 38 (3–100) psy and aspiration 80 81% 0.51 0.606 66 31 (1–100) psy and aspiration 80 81% 0.51 0.606 66 31 (1–100) psy and aspiration 80 81% 0.51 0.606 66 31 (1–100) psy and aspiration 80 81% 0.51 0.606 66 31 (1–100) psy and aspiration 80 107 70% 0.33 0.073 156 36 (3–100) oyears 107 70% 0.35 0.256 78 36 (3–100) oyears 107 70% 0.35 0.256 78 36 (3–100)	60 years	108	78%	0.34	0.540	06	30 (2–100)	25 (3–100)	0.58	(0.41–0.71)
nate 109 70% 0.10 0.296 88 36 (1–100) of BMA psy piration 66 64% 0.16 0.540 52 38 (3–100) piration 80 81% 0.51 0.606 66 31 (1–100) smin 181 69% 0.31 0.350 41 25 (2–100) smin 50 86% 0.55 0.453 142 45 (1–99) during BMA cian, total 2.34 70% 0.33 0.073 156 36 (2–100) oyeans 107 70% 0.35 0.012 78 36 (3–100) male 109 72% 0.35 0.012 78 36 (3–100) and aspiration 67 72% 0.31 0.850 55 25 (3–100) or BMA ne marrow biopsy 87 68% 0.31 0.850 55 37 (2–100) boys and aspiration 67 72% 0.31 0.850 55 37 (2–100) boys and aspiration 77 72% 0.31 0.850 55 37 (2–100) boys and aspiration 77 72% 0.31 0.850 55 37 (2–100) boys and aspiration 77 72% 0.31 0.850 55 37 (2–100) boys and aspiration 77 72% 0.31 0.850 55 37 (2–100) boys and aspiration 77 72% 0.31 0.850 55 37 (2–100)	>60 years	126	%69	0.35	0.200	95	27 (1–100)	20 (3–100)	0.28	(0.07-0.46)
male 109 70% 0.10 0.296 88 36 (1–100) of BMA 125 76% 0.46 0.855 97 27 (2–100) pixal apsy 88 73% 0.39 0.838 67 20 (3–100) pixal 88 73% 0.39 0.838 67 20 (3–100) pixal 80 81% 0.16 0.540 52 38 (3–100) psy and aspiration 80 81% 0.51 0.606 66 31 (1–100) duration 50 86% 0.53 0.453 41 25 (2–100) 5 min 50 86% 0.55 0.453 41 25 (2–100) 5 min 50 86% 0.55 0.453 41 25 (2–100) 5 min 50 86% 0.55 0.453 142 45 (1–99) during BMA 107 70% 0.37 0.256 78 36 (3–100) opears 112	Sex									
of BMA 125 76% 0.46 0.855 97 27 (2–100) piration 66 64% 0.16 0.540 52 38 (3–100) piration 66 64% 0.16 0.540 52 38 (3–100) psysy and aspiration 80 81% 0.51 0.606 66 31 (1–100) cduration 5 min 181 69% 0.31 0.350 41 25 (2–100) 5 min 5 min 50 86% 0.55 0.453 142 45 (1–99) during BMA 107 70% 0.33 0.073 156 36 (2–100) o years 107 70% 0.33 0.216 78 37 (2–1009) o years 107 70% 0.37 0.256 78 36 (3–100) d years 1127 70% 0.37 0.256 78 36 (3–100) of BMA 1125 69% 0.31 0.873 82 28 (2–100)	Female	109	%02	0.10	0.296	88	36 (1–100)	22 (2–100)	0.39	(0.17-0.57)
of BMA 88 73% 0.39 0.838 67 20 (3-100) piration 66 64% 0.16 0.540 52 38 (3-100) ppsy and aspiration 80 81% 0.51 0.606 66 31 (1-100) oduration 5 81% 0.51 0.606 66 31 (1-100) smin 50 86% 0.55 0.453 142 45 (1-99) during BMA 234 70% 0.35 0.073 156 36 (2-100) oyears 107 70% 0.25 0.216 78 37 (2-100) oyears 107 70% 0.37 0.256 78 36 (3-100) oyears 109 72% 0.35 0.012 74 40 (4-100) of BMA 125 69% 0.31 0.850 82 28 (3-100) one marrow biopsy 87 68 0.31 0.859 45 43 (3-100) osy and aspiration 67 <td>Male</td> <td>125</td> <td>%9<i>L</i></td> <td>0.46</td> <td>0.855</td> <td>26</td> <td>27 (2–100)</td> <td>19 (1–95)</td> <td>0.50</td> <td>(0.31-0.65)</td>	Male	125	%9 <i>L</i>	0.46	0.855	26	27 (2–100)	19 (1–95)	0.50	(0.31-0.65)
ppsy 88 73% 0.39 0.838 67 20 (3–100) piration 66 64% 0.16 0.540 52 38 (3–100) ppsy and aspiration 80 81% 0.51 0.606 66 31 (1–100) 5 min 50 86% 0.53 0.453 41 25 (2–100) 5 min 50 86% 0.55 0.453 142 45 (1–99) during BMA4 234 70% 0.33 0.073 156 36 (2–100) 0 years 107 70% 0.25 0.216 78 37 (2–100) 0 years 107 70% 0.37 0.256 78 36 (3–100) nemate 109 72% 0.35 0.012 78 36 (3–100) of BMA 125 69% 0.32 0.873 82 28 (2–100) ne marrow biopsy 87 68% 0.31 0.850 52 (3–100) nex marrow aspiration 67 72%	Type of BMA									
piration 66 64% 0.16 0.540 52 38 (3-100) 2 psy and aspiration 80 81% 0.51 0.606 66 31 (1-100) 3 c. duration 5 min 50 86% 0.55 0.453 142 45 (1-99) 4 cian, total 234 70% 0.25 0.216 78 37 (2-100) 6 years 107 70% 0.25 0.216 78 36 (3-100) 6 years 109 72% 0.35 0.012 74 40 (4-100)	Biopsy	88	73%	0.39	0.838	<i>L</i> 9	20 (3–100)	18 (2–95)	0.46	(0.25-0.63)
appsy and aspiration of duration of duration of duration 81 % 0.51 0.606 66 31 (1–100) 5 min 5 min 6.31 0.350 41 25 (2–100) 5 min 50 86% 0.55 0.453 142 45 (1–99) during BMA 6 min 50 86% 0.55 0.073 156 36 (2–100) O years 107 70% 0.25 0.216 78 37 (2–1009) O years 107 70% 0.37 0.256 78 36 (3–100) male 125 69% 0.35 0.012 74 40 (4–100) of BMA 125 69% 0.32 0.873 82 28 (2–100) one marrow biopsy 87 68% 0.31 0.850 55 25 (3–100) one marrow aspiration 80 71% 0.32 0.095 56 37 (2–100) one marrow aspiration 80 71% 0.32 0.095 56 37 (2–100)	Aspiration	99	64%	0.16	0.540	52	38 (3–100)	20 (1–90)	0.26	(002 to 0.49)
Auration 5 min 69% 0.31 0.350 41 25 (2–100) 5 min 50 86% 0.55 0.453 142 45 (1–99) during BMAA 234 70% 0.33 0.073 156 36 (2–100) 0 years 107 70% 0.25 0.216 78 37 (2–100) 0 years 127 70% 0.37 0.256 78 36 (3–100) male 129 72% 0.35 0.012 74 40 (4–100) of BMA 125 69% 0.32 0.873 82 28 (2–100) one marrow biopsy 87 68% 0.31 0.850 55 25 (3–100) obsy and aspiration 67 72% 0.37 0.095 56 37 (2–100)	Biopsy and aspiration	80	81%	0.51	909.0	99	31 (1–100)	25 (3–100)	0.58	(0.36-0.73)
5 min 50 86% 0.35 0.453 41 25 (2–100) 5 min 50 86% 0.55 0.453 142 45 (1–99) during BMA 234 70% 0.33 0.073 156 36 (2–100) cian, total 234 70% 0.25 0.216 78 37 (2–100) 0 years 107 70% 0.37 0.256 78 36 (3–100) nale 109 72% 0.35 0.012 74 40 (4–100) ne marrow biopsy 87 68% 0.31 0.850 55 25 (3–100) ne marrow aspiration 67 72% 0.37 0.095 56 37 (2–100) sopsy and aspiration 80 71% 0.32 0.095 56 37 (2–100)	BMA duration									
5 min 50 86% 0.55 0.453 142 45 (1–99) during BMA cian, total 234 70% 0.33 0.073 156 36 (2–100) 0 years 107 70% 0.25 0.216 78 37 (2–1009) 0 years 127 70% 0.37 0.256 78 36 (3–100) male 129 72% 0.35 0.012 74 40 (4–100) ale 125 69% 0.32 0.873 82 28 (2–100) of BMA of BMA 87 68% 0.31 0.850 55 25 (3–100) ne marrow biopsy 87 68% 0.37 0.359 45 43 (3–100) posy and aspiration 80 71% 0.32 0.095 56 37 (2–100)	15 min	181	%69	0.31	0.350	41	25 (2–100)	18 (1–90)	0.40	(0.20-0.56)
during BMA 1cian, total 234 70% 0.33 0.073 156 36 (2–100) 1 years 107 70% 0.25 0.216 78 37 (2–100) 1 years 127 70% 0.37 0.256 78 36 (3–100) 1 male 109 72% 0.35 0.012 74 40 (4–100) 1 le 125 69% 0.32 0.873 82 28 (2–100) 1 of BMA 12 68% 0.31 0.850 55 25 (3–100) 1 me marrow aspiration 67 72% 0.37 0.095 56 37 (2–100) 1 spy and aspiration 80 71% 0.32 0.095 56 37 (2–100)	>15 min	50	%98	0.55	0.453	142	45 (1–99)	36 (6–1009	0.45	(0.18-0.66)
cian, total 2.34 70% 0.33 0.073 156 36 (2–100) 0 years 107 70% 0.25 0.216 78 37 (2–1009) 0 years 127 70% 0.37 0.256 78 36 (3–100) male 109 72% 0.35 0.012 74 40 (4–100) of BMA 125 69% 0.32 0.873 82 28 (2–100) of BMA 1 68% 0.31 0.850 55 25 (3–100) ne marrow biopsy 87 68% 0.37 0.359 45 43 (3–100) nov and aspiration 67 72% 0.37 0.095 56 37 (2–100)	Pain during BMA									
0 years 107 70% 0.25 0.216 78 37 (2–1009) 0 years 127 70% 0.37 0.256 78 36 (3–100) male 109 72% 0.35 0.012 74 40 (4–100) ule 125 69% 0.32 0.873 82 28 (2–100) of BMA ne marrow biopsy 87 68% 0.31 0.850 55 25 (3–100) nosy and aspiration 67 72% 0.37 0.095 56 37 (2–100)	Physician, total	234	%02	0.33	0.073	156	36 (2–100)	21 (2–100)	0.42	(0.23-0.56)
0 years 107 70% 0.25 0.216 78 37 (2-1009) 0 years 127 70% 0.37 0.256 78 36 (3-100) male 109 72% 0.35 0.012 74 40 (4-100) ale 125 69% 0.32 0.873 82 28 (2-100) of BMA 68 0.31 0.850 55 25 (3-100) ne marrow biopsy 87 68% 0.37 0.359 45 43 (3-100) posy and aspiration 67 72% 0.32 0.095 56 37 (2-100)	Age									
0 years 127 70% 0.37 0.256 78 36 (3–100) male 109 72% 0.35 0.012 74 40 (4–100) ule 125 69% 0.32 0.873 82 28 (2–100) of BMA ne marrow biopsy 87 68% 0.31 0.850 55 25 (3–100) ne marrow aspiration 67 72% 0.37 0.035 45 43 (3–100) posv and aspiration 80 71% 0.32 0.095 56 37 (2–100)	60 years	107	%02	0.25	0.216	78	37 (2–1009	27 (2–100)	09.0	(0.41–0.73)
male 109 72% 0.35 0.012 74 40 (4–100) of BMA 125 69% 0.32 0.873 82 28 (2–100) of BMA ne marrow biopsy 87 68% 0.31 0.850 55 25 (3–100) ne marrow aspiration 67 72% 0.37 0.359 45 43 (3–100) posy and aspiration 80 71% 0.32 0.095 56 37 (2–100)	>60 years	127	%02	0.37	0.256	78	36 (3–100)	16 (2–92)	0.19	(0.19-0.38)
109 72% 0.35 0.012 74 40 (4–100) 125 69% 0.32 0.873 82 28 (2–100) w biopsy 87 68% 0.31 0.850 55 25 (3–100) w aspiration 67 72% 0.37 0.359 45 43 (3–100) aspiration 80 71% 0.32 0.095 56 37 (2–100)	Sex									
ubiopsy 87 82 28 (2–100) w biopsy 87 68% 0.31 0.850 55 25 (3–100) w aspiration 67 72% 0.37 0.359 45 43 (3–100) aspiration 80 71% 0.32 0.095 56 37 (2–100)	Female	109	72%	0.35	0.012	74	40 (4–100)	22 (2–100)	0.35	(0.09-0.55)
w biopsy 87 68% 0.31 0.850 55 25 (3–100) w aspiration 67 72% 0.37 0.359 45 43 (3–100) aspiration 80 71% 0.32 0.095 56 37 (2–100)	Male	125	%69	0.32	0.873	82	28 (2–100)	20 (2–90)	0.50	(0.31-0.65)
87 68% 0.31 0.850 55 25 (3-100) ion 67 72% 0.37 0.359 45 43 (3-100) 1 80 71% 0.32 0.095 56 37 (2-100)	Type of BMA									
on 67 72% 0.37 0.359 45 43 (3–100) 80 71% 0.32 0.095 56 37 (2–100)	Bone marrow biopsy	87	%89	0.31	0.850	55	25 (3–100)	20 (2–85)	0.52	(0.29-0.69)
80 71% 0.32 0.095 56 37 (2–100)	Bone marrow aspiration		72%	0.37	0.359	45	43 (3–100)	15 (2–90)	0.16	(09 to 0.40)
	Biopsy and aspiration	80	71%	0.32	0.095	26	37 (2–100)	26 (2–100)	0.50	(0.24-0.69)

Variable	u	$P(A)^a$	Kappa ^b	$P(A)^a$ Kappa b McNemar c	VAS, n	Patient VAS, median (range)	VAS, n Patient VAS, median (range) Nurse/physician, median (range) $_{\rm ICC}d$ 95% CI	$_{lCC}^{q}$	95% CI
15 min	182	%89	68% 0.30 0.118	0.118	120	120 27 (3–100)	18 (2–90)	0.37	0.37 (0.17–0.53)
>15 min	50	78%	0.42	0.274	35	35 56 (2–99)	34 (4–100)	0.42	(0.19-0.65)

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^aProportions of agreement P(A).

 $[\]ensuremath{\hbar_{\mathrm{Rappa}}}$ corrects for the eventuality that agreement could occur by chance alone.

[&]quot;Test marginal homogeneity between ratings of occurrence of pain among patients versus health-care professionals.

degreement between the patients' and the health-care professionals' scoring of intensity of pain by using VAS was evaluated with single-measure intra-class correlation (ICC).

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Table 3

ty about BMA outcome 227 56% years 104 63% years 123 54% rale 108 58% le marrow biopsy 87 52% re marrow biopsy 87 52% re marrow biopsy and aspiration 76 64% duration 48 67% min 48 67% years 107 51% years 107 51% years 127 57% ian, total 234 55% ie 125 55% of BMA 109 54% ie 125 55% of BMA 125 55% ne marrow biopsy 87 51% ne marrow aspiration 67 61% h biopsy and aspiration 80 54%	Variable	u	$P(A)^{a}$	Kappa	$McNemar^c$	VAS, n	Patient VAS, median (range)	Nurse/physician, median (range)	$_{\rm ICC}^q$	95% CI
votability 227 56% 0.19 0.043 147 30 (1-100) 18 (1-100) 0.13 years 11 63% 0.043 0.043 37 (2-100) 15 (1-85) 0.01 years 112 55% 0.03 0.111 67 37 (2-100) 15 (1-85) 0.02 bule 119 55% 0.13 0.007 76 60 (2-100) 16 (1-74) 0.03 of BMA 119 55% 0.13 0.024 71 34 (1-100) 18 (2-100) 0.03 of Bhopsy and aspiration 64 53% 0.07 0.165 73 48 (1-100) 18 (2-100) 0.01 bhopsy and aspiration 64 53% 0.07 0.018 46 50 (-100) 18 (2-100) 0.01 dumin 17 34% 0.02 0.020 113 50 (-100) 18 (2-100) 0.01 dumin 17 34% 0.03 0.03 0.13 46 (2-100) 18 (2-10) 0.01 <td>Anxiety about BMA outcome</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Anxiety about BMA outcome									
years 104 63% 0.045 80 54 (1–100) 22 (2–100) 0.22 years 123 54% 0.08 0.111 67 37 (2–100) 15 (1–85) -01 ushe 119 55% 0.13 0.007 76 60 (2–1009) 18 (2–100) 0.08 -01 a FBMA 119 55% 0.10 0.341 71 34 (1–100) 20 (1–74) 0.09 18 (2–100) 0.09 a FBMA 119 55% 0.10 0.341 71 34 (1–100) 20 (1–74) 0.09 b biopsy and aspiration 64 53% 0.07 0.018 46 50 (3–100) 18 (1–95) 0.01 a min 176 53% 0.06 0.020 113 50 (1–100) 18 (1–95) 0.01 duration 48 67% 0.33 0.453 32 46 (2–100) 22 (2–100) 0.01 years 177 53% 0.06 0.020 113 50 (1–100)	Nurse, total	227	%95	0.19	0.009	147	50 (1–100)	18 (1–100)	0.13	(-0.03 to 0.28)
years 104 63% 0.04 0.045 80 \$4(1-100) 22(2-100) 0.22 years 123 54% 0.08 0.11 67 37(2-100) 15(1-85) -0.01 -0.1 sule 108 58% 0.13 0.007 76 60 (2-1009) 18 (2-100) 0.03 se marrow biopsy 87 52% 0.10 0.341 71 34 (1-100) 18 (2-100) 0.01 0.01 b hiopsy and aspiration 64 53% 0.07 0.165 74 48 (1-100) 18 (2-100) 0.01 0.01 b hiopsy and aspiration 76 64% 0.29 0.700 44 51 (2-100) 18 (2-100) 0.01 0.01 duration 176 53% 0.06 0.020 113 50 (1-100) 18 (2-100) 0.01 0.01 years 176 53% 0.04 0.020 113 50 (1-100) 18 (1-30) 0.11 0.01 years 18	Age									
John State 123 54% 0.08 0.111 67 37 (2-100) 15 (1-85) -01 -01 John State 118 55% 0.13 0.007 76 60 (2-1009) 18 (2-100) 0.008 -01 John State 119 55% 0.10 0.341 71 34 (1-100) 18 (2-100) 0.00 -01 A MANA 118 25% 0.02 0.165 57 48 (1-100) 18 (2-100) 0.01 0.01 A biopsy and aspiration 64 53% 0.07 0.018 48 (1-100) 18 (2-100) 0.01 0.01 A biopsy and aspiration 64 53% 0.07 0.020 44 51 (2-100) 18 (2-83) 0.07 A biopsy and aspiration 64 53% 0.06 0.020 44 51 (2-100) 18 (2-83) 0.02 A biopsy and aspiration 64 53% 0.045 32 46 (2-100) 18 (2-83) 0.01 0.01 A state 10	60 years	104	63%	60.0	0.045	80	54 (1–100)	22 (2–100)	0.22	(01 to 0.42)
tale 108 58% 0.13 0.007 76 60 (2–1009) 18 (2–100) 0.08 1.0 0.09 1.0 0.00	>60 years	123	54%	80.0	0.1111	<i>L</i> 9	37 (2–100)	15 (1–85)	01	(16 to 0.16)
ale animate 18 58% o.13 o.007 o.8 60.2-1009 b.00 b.00 o.08 b.0 o.08 b.0 o.08 b.0	Sex									
of BMA of BMA of BMA of BMA and mematrow biopsys and aspiration of BMA of BMA of BMA of BMA of BMA and mematrow biopsys and aspiration of Size (107) of BMA and mematrow biopsys and aspiration of Size (116) of BMA	Female	108	%85	0.13	0.007	92	60 (2–1009	18 (2–100)	0.08	(08 to 0.26)
or BMA nor marrow biopsy	Male	119	25%	0.10	0.341	71	34 (1–100)	20 (1–74)	0.09	(09 to 0.26)
one marrow biopsy 87 22% 0.016 0.165 57 48 (1–100) 18 (2–1009) 0.11 one marrow aspiration 64 53% 0.07 0.018 46 50 (3–100) 20 (1.87) 0.07 0.07 of utration 75 64% 0.29 0.700 44 51 (2–100) 18 (2–83) 0.02 0.01 1.02 0.02	Type of BMA									
one macrow aspiration 64 53% 0.07 0.018 46 50 (3-100) 20 (1.87) 0.07 0.018 0.07 0.018 0.07 0.018 0.07 0.018 0.07	Bone marrow biopsy	87	52%	0.02	0.165	57	48 (1–100)	18 (2–1009	0.11	(10 to 0.33)
Administration of the following and aspiration of 5 min o	Bone marrow aspiration	49	53%	0.07	0.018	46	50 (3–100)	20 (1.87)	0.07	(11 to 0.28)
b min but based and aspiration between the contract of a single based and aspiration between the contract of a single based and a spiration between the contract of a single based and a spiration between the contract of a single based and a spiration between the contract of a single based aspiration between the contract of a single based and a single based aspiration between the contract of a single based aspiration between the contract of a s	Both biopsy and aspiration	92	64%	0.29	0.700	4	51 (2–100)	18 (2–83)	0.22	(06 to 0.48)
5 minh 176 53% 0.06 0.020 113 50 (1-100) 18 (1-95) 0.12 0.12 0.12 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00 0.14 0.14 0.00 0.14 0.00 0.14 0.00 0.14 0.14 0.00 0.14 0.00 0.14 0.14 0.00 0.14 0.14 0.00 0.14 0.14 0.00 0.14	BMA duration									
5 min 48 67% 0.33 0.453 32 46 (2-100) 22 (2-100) 0.14 0.14 0.05 0.453 32 46 (2-100) 22 (2-100) 0.14 0.14 0.05 0.05 0.01 98 50 (1-100) 23 (2-100) 0.33 0.33 0.33 0.34	15 min	176	53%	90.0	0.020	113	50 (1-100)	18 (1–95)	0.12	(04 to 0.29)
ecy about BMA outcome 234 55% 0.14 0.000 98 50 (1–100) 23 (2–100) 0.30 0.30 0 years 107 51% 0.05 0.001 59 50 (1–100) 26 (2–100) 0.46 0.30 0 years 107 51% 0.16 0.0002 39 50 (2–100) 20 (3–85) 0.07 0.07 male 127 57% 0.11 0.000 51 63 (1–100) 27 (4–100) 0.18 0.07 ale 0.12 0.002 47 34 (1–100) 18 (2–799) 0.36 0.36 of BMA 1 0.00 37 49 (1–100) 21 (2–100) 0.36 0.36 one marrow biopsy 87 51% 0.05 0.006 37 49 (1–100) 26 (4–79) 0.38 0.38 oth biopsy and aspiration 67 61% 0.009 31 60 (4–100) 22 (3–100) 0.38 0.38	>15 min	48	%19	0.33	0.453	32	46 (2–100)	22 (2–100)	0.14	(16 to 0.44)
cian, total 234 55% 0.14 0.000 98 50 (1-100) 23 (2-100) 0.36 0.36 0 years 107 51% 0.05 0.001 59 50 (1-100) 26 (2-100) 0.46 0.46 0 years 127 57% 0.16 0.0002 39 50 (2-100) 20 (3-85) 0.07 0.07 ale 128 55% 0.11 0.000 51 34 (1-100) 18 (2-79) 0.36 0.36 of BMAs 128 51% 0.05 0.006 37 49 (1-100) 12 (2-100) 0.36 0.36 one marrow biopsy 87 51% 0.006 37 49 (1-100) 26 (4-79) 0.38 0.38 on marrow aspiration 67 61% 0.009 31 60 (4-100) 26 (4-79) 0.38 0.38	Anxiety about BMA outcome									
0 years 107 51% 0.05 0.001 59 50 (1–100) 26 (2–100) 0.46 0 years 127 57% 0.16 0.0002 39 50 (1–100) 20 (3–85) 0.07 male 128 54% 0.11 0.000 51 63 (1–100) 18 (2–799) 0.18	Physician, total	234	25%	0.14	0.000	86	50 (1-100)	23 (2–100)	0.30	(0.06-0.50)
years 107 51% 0.05 0.001 59 50 (1-100) 26 (2-100) 0.66 0.07 1.00 0.00 1.00 20 (3-85) 0.07 </td <td>Age</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Age									
Dyears 127 57% 0.16 0.0002 39 50 (2-100) 20 (3-85) 0.07 0.07 nale 109 54% 0.11 0.000 51 63 (1-100) 18 (2-799) 0.18 0.19	60 years	107	51%	0.05	0.001	59	50 (1-100)	26 (2–100)	0.46	(0.17-0.66)
nale 109 54% 0.11 0.000 51 63 (1–100) 27 (4–100) 0.18 0.18 of BMA 125 55% 0.12 0.002 47 34 (1–100) 18 (2–799) 0.36 0.36 ne marrow biopsy 87 51% 0.05 0.006 37 49 (1–100) 21 (2–100) 0.27 0.27 ne marrow aspiration 67 61% 0.28 0.000 31 60 (4–100) 26 (4–79) 0.38 0.38 nh biopsy and aspiration 80 54% 0.10 0.049 30 51 (2–100) 22 (3–100) 0.28	>60 years	127	21%	0.16	0.0002	39	50 (2-100)	20 (3–85)	0.07	(14 to 0.31)
w biopsy 87 6.10 0.000 51 63 (1-100) 27 (4-100) 0.18 0.19 <td>Sex</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Sex									
w biopsy 87 51% 0.02 47 34 (1–100) 18 (2–799) 0.36 0.36 0.37 4 (1–100) 0.37 4 (1–100) 21 (2–100) 0.27 0.27 0.37 0.37 0.37 0.37 0.37 0.37 0.37 0.38	Female	109	54%	0.11	0.000	51	63 (1–100)	27 (4–100)	0.18	(05 to 0.42)
w biopsy 87 51% 0.05 0.006 37 49 (1–100) 21 (2–100) 0.27 w aspiration 67 61% 0.28 0.000 31 60 (4–100) 26 (4–79) 0.38 and aspiration 80 54% 0.10 0.049 30 51 (2–100) 22 (3–100) 0.28	Male	125	25%	0.12	0.002	47	34 (1–100)	18 (2–799	0.36	(0.06-0.60)
ion 67 51% 0.05 0.006 37 49 (1–100) 21 (2–100) 0.27 0.27 1.24 (1–100) 0.28 0.000 31 60 (4–100) 26 (4–79) 0.38 0.38 0.38 0.10 0.049 30 51 (2–100) 22 (3–100) 0.28 0.28 0.28 0.28 0.29 0.29 0.29 0.29 0.29 0.29 0.29 0.29	Type of BMA									
67 61% 0.28 0.000 31 60 (4-100) 26 (4-79) 0.38 on 80 54% 0.10 0.049 30 51 (2-100) 22 (3-100) 0.28	Bone marrow biopsy	87	51%	0.05	90000	37	49 (1–100)	21 (2–100)	0.27	(02 to 0.54)
80 54% 0.10 0.049 30 51 (2-100) 22 (3-100) 0.28	Bone marrow aspiration	29	61%	0.28	0.000	31	60 (4–100)	26 (4–79)	0.38	(06 to 0.68)
	Both biopsy and aspiration	80	54%	0.10	0.049	30	51 (2–100)	22 (3–100)	0.28	(04 to 0.56)

Variable	и	P(A) ^a	Kappa	$\mathbf{P}(\mathbf{A})^d$ Kappa b McNemar c		Patient VAS, median (range)	VAS, n Patient VAS, median (range) Nurse/physician, median (range) $_{ m ICC}d$ 95% CI	$p^{\text{COC}}q$	95% CI
15 min	182	52%	0.12	0.000	73	73 52 (1–100)	21 (2–100)	0.32	0.32 (0.01–0.56)
>15 min	50	%09	0.17	0.500	25	25 45 (2–100)	35 (5–100)	0.24	0.24 (15 to 0.57)

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 a Proportions of agreement P(A).

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 $b_{\mbox{\footnotesize Rappa}}$ corrects for the eventuality that agreement could occur by chance alone.

 $^{^{}c}$ Test marginal homogeneity between ratings of occurrence of anxiety among patients versus health-care professionals.

dAgreement between the patients' and the health-care professionals' scoring of intensity of anxiety by using VAS was evaluated with single-measure intra-class correlation (ICC).

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Table 4

Auxiety about meedle finearing Assistation	Variable	u	$P(A)^{a}$	Kappa^b	$\operatorname{McNemar}^c$	VAS, n	Patient VAS, median (range)	Nurse/physician, median (range)	ICC^d	95% CI
years 107 51% 0.0000 13 48 (1-100) 10 (1-100) 0.24 years 105 51% 0.00 71 50 (1-100) 13 (1-100) 0.01 years 126 53% 0.02 0.0000 67 44 (1-98) 9 (1-83) 0.15 nate 124 56% 0.09 0.0000 67 44 (1-98) 9 (1-83) 0.11 of BMA 124 56% 0.09 0.0000 65 44 (1-98) 9 (1-83) 0.11 of BMA 124 56% 0.00 0.0000 45 50 (4-100) 9 (1-83) 0.11 duration 18 52% 0.05 0.0000 45 50 (4-100) 9 (1-83) 0.11 duration 18 2.24 0.05 0.000 45 50 (4-100) 9 (1-83) 0.11 duration 18 0.28 0.20 0.020 3 44 (1-100) 14 (1-100) 0.14 duration	Anxiety about needle insertion									
years 107 51% 0.10 0.0000 71 50 (1-100) 13 (1-100) 0.31 years 126 55% 0.05 0.0002 61 44 (1-98) 10 (1-83) 0.15 be 124 56% 0.07 0.0001 67 64 (1-100) 14 (1-100) 0.25 be 124 56% 0.07 0.0004 47 44 (1-100) 10 (1-78) 0.13 or marrow kiopsy 87 52% 0.05 0.0000 45 50 (4-100) 10 (1-78) 0.23 bit biopsy and aspiration 80 62% 0.20 0.0004 47 44 (1-100) 10 (1-78) 0.13 duration 80 22% 0.20 0.000 45 50 (4-100) 14 (1-100) 0.13 duration 180 52% 0.20 0.020 37 47 (1-100) 14 (1-100) 0.13 simin 180 52% 0.20 0.020 38 47 (1-100) 17 (1-100)	Nurse, total	233	53%	0.10	0.0000	132	48 (1–100)	10 (1–100)	0.24	(05 to 0.47)
years 107 51% 0.10 0.000 71 50 (1-100) 13 (1-100) 0.01 years 126 55% 0.05 0.002 61 44 (2-1009) 13 (1-100) 0.15 rate 12 56% 0.05 0.000 65 44 (1-100) 14 (1-100) 0.15 te 12 56% 0.05 0.000 65 44 (1-100) 14 (1-100) 0.15 of BMA 12 56% 0.05 0.0000 45 54 (1-100) 14 (1-100) 0.23 bit biopsy and aspiration 86 24% 0.05 0.000 45 54 (1-100) 9 (1-83) 0.02 duration 18 52% 0.23 0.36 47 (1-100) 9 (1-83) 0.03 s min 25 0.20 0.000 37 47 (1-100) 9 (1-83) 0.03 s min 25 0.20 0.000 37 47 (1-100) 9 (1-83) 0.03 s min 25	Age									
name 12 55% 0.05 0.0001 67 64 (1–100) 10 (1–83) 0.11 nale 10 50% 0.07 0.0001 67 64 (1–100) 14 (1–100) 0.02 le 124 56% 0.09 0.0000 65 44 (1–98) 9 (1–83) 0.11 of BMA 12 56% 0.09 0.0000 45 54 (1–100) 10 (1–78) 0.01 be insuraw biopsy 87 228 0.05 0.0000 45 54 (1–100) 9 (1–83) 0.01 duration 180 62% 0.23 0.361 40 (1–100) 9 (1–83) 0.01 duration 180 62% 0.02 0.02 47 (1–100) 9 (1–83) 0.03 s min 50 88 0.20 0.02 37 (4–100) 9 (1–83) 0.03 s min 20 88 0.20 0.000 37 (4–100) 9 (1–83) 0.01 s min 20 88 0.2	60 years	107	51%	0.10	0.0000	71	50 (1–100)	13 (1–100)	0.31	(06 to 0.59)
nade 109 50% 0.07 0.0001 67 64 (1–100) 14 (1–100) 0.03 per 124 56% 0.09 0.0006 65 44 (1–100) 10 (1–78) 0.11 of BMAA ne marrow biopsy 87 52% 0.06 0.0004 47 44 (1–100) 9 (1–78) 0.23 ne marrow sapiration 66 44% 0.05 0.0000 45 50 (4–100) 9 (1–78) 0.20 duration nin 80 62% 0.23 0.361 40 46 (1–100) 9 (1–78) 0.20 duration 18 52% 0.05 0.000 97 47 (1–100) 9 (1–83) 0.19 s min 50 88% 0.20 0.029 33 64 (1–100) 17 (1–100) 0.19 sin tin 103 54% 0.21 0.000 97 47 (1–100) 9 (1–83) 0.19 system total 123 63% 0.22 0.001 31 47 (1	>60 years	126		0.05	0.0002	61	44 (2–1009	10 (1–83)	0.15	(07 to 0.36)
tele 19 50% 0.07 0.0001 67 64 (1-100) 14 (1-100) 0.14 of BMA 124 56% 0.09 0.0006 65 44 (1-98) 9 (1-83) 0.11 of BMA 124 56% 0.00 0.0004 47 44 (1-100) 10 (1-78) 0.11 ne marrow biopsys 87 52% 0.05 0.0000 45 50 (4-100) 9 (1-78) 0.12 th biopsy and aspiration 80 6.2% 0.23 0.361 40 4 (1-100) 9 (1-78) 0.13 duration 18 5.2% 0.02 0.000 4 4 (1-100) 9 (1-78) 0.13 duration 18 5.2% 0.02 0.02 3 4 (1-100) 9 (1-80) 0.03 s min 5 8 0.02 0.000 3 4 (1-100) 9 (1-80) 0.03 system total 12 6.3% 0.01 3 4 (1-100) 17 (1-100) 0.03 <	Sex									
be the better of BMA are marrow biopsys 87 52% 0.06 0.0004 47 4 (1–100) 10 (1–78) 0.029 0.	Female	109	%09	0.07	0.0001	29	64 (1–100)	14 (1–100)	0.26	(06 to 0.53)
of BMA are marrow biopsys 87 52.% 0.06 0.0004 47 44 (1–100) 10 (1–78) 0.23 ne marrow aspiration 66 44.% 0.05 0.0000 45 50 (4–100) 9 (1–78) 0.20 duration 80 62.% 0.23 0.361 40 46 (1–1009) 9 (1–78) 0.20 duration 80 62.% 0.20 0.000 97 47 (1–100) 9 (1–83) 0.20 s min 50 8.8 0.20 0.029 33 64 (1–100) 9 (1–83) 0.19 sy about needle insertion 1.8 5.8 0.20 0.029 33 64 (1–100) 9 (1–83) 0.19 sy about needle insertion 1.07 54% 0.21 0.0000 43 61 (1–100) 9 (1–83) 0.19 sy about needle insertion 1.07 54% 0.21 0.0000 43 61 (1–100) 9 (1–83) 0.13 syear 1.07 54% 0.18 0.0000 <td>Male</td> <td>124</td> <td>%95</td> <td>60.0</td> <td>900000</td> <td>65</td> <td>44 (1–98)</td> <td>9 (1–83)</td> <td>0.11</td> <td>(07 to 0.31)</td>	Male	124	%95	60.0	900000	65	44 (1–98)	9 (1–83)	0.11	(07 to 0.31)
ne marrow biopsys 87 52% 0.06d 47 44 (1–100) 10 (1–78) 0.23 the incepsy and aspiration 66 44% 0.05 0.000 45 50 (4–100) 9 (1–78) 0.20 duration 1 2.2% 0.23 0.361 46 46 (1–1009) 14 (1–100) 9 (1–78) 0.20 smin 50 52% 0.20 0.000 97 47 (1–100) 9 (1–83) 0.19 smin 50 58% 0.20 0.002 37 47 (1–100) 9 (1–83) 0.19 sty about needle insertion 3 0.21 0.000 81 50 (81–100) 17 (1–100) 0.29 sty about needle insertion 107 54% 0.21 0.000 81 50 (81–100) 17 (1–100) 0.29 sty about needle insertion 107 54% 0.23 0.0013 81 50 (81–100) 17 (1–100) 0.23 stear 1 54% 0.23 0.0013 34 45 (1–1	Type of BMA									
ht biopsy and aspiration 6 44% 0.05 0.0000 45 50 (4-100) 9 (1-78) 0.020 0.20 duration 4.0 0.23 0.261 0.26 0.261 0.26 0.261 0.2	Bone marrow biopsy	87	52%	90.0	0.0004	47	44 (1–100)	10 (1–78)	0.23	(07 to 0.50)
ht biopsy and aspiration 80 62% 0.23 0.361 40 46 (1–1009 14 (1–100) 0.30 duration 81 52% 0.20 0.000 97 47 (1–100) 9 (1–83) 0.19 s min 50 58% 0.20 0.002 33 64 (1–100) 16 (1–100) 0.29 sy about needle insertion 2.34 5.9% 0.21 0.0000 81 5.0 (81–100) 17 (1–100) 0.29 sy about needle insertion 2.34 5.9% 0.23 0.0013 38 45 (1–100) 17 (1–100) 0.30 start total 127 63% 0.23 0.0013 38 45 (1–100) 17 (1–100) 0.31 le 128 62% 0.18 0.0000 36 40 (1–98) 17 (2–100) 0.30 le 129 62% 0.18 0.0000 36 40 (1–98) 17 (2–100) 0.30 le marrow biopsy 87 61% 0.0000 36 40 (1–100) 16 (3–11) 0.40 le marrow aspiration 67 57% 0.23 0.0000 34 46 (1–100) 15 (2–100) 0.50 le biopsy and aspiration 80 59% 0.14 0.082 22 75 (3–100) 15 (2–100) 0.50 le bin biopsy and aspiration 80 59% 0.14 0.082 22 75 (3–100) 15 (2–100) 0.50 le bin biopsy and aspiration 80 60.000 60.000 60.000 le bin biopsy and aspiration 60 60.000 60.000 60.000 le bin biopsy and aspiration 60 60.000 60.000 60.000 le bin biopsy and aspiration 60 60.000 60.000 le bin bin biopsy and aspiration 60 60.000 60.000 le bin bin bin biopsy and aspiration 60 60.000 60.000 le bin bin bin biopsy and aspiration 60 60.000 60.000	Bone marrow aspiration	99	44%	0.05	0.0000	45	50 (4–100)	9 (1–78)	0.20	(09 to 0.48)
duration simin 9 (1–83) 0.19 s min 50 58% 0.20 0.029 33 64 (1–100) 9 (1–83) 0.19 sylabout needle insertion 234 58% 0.20 0.029 33 64 (1–100) 16 (1–100) 0.29 sylabout needle insertion 234 59% 0.21 0.0000 41 50 (81–100) 17 (1–100) 0.29 sylaboration 107 54% 0.18 0.0000 43 61 (3–100) 17 (1–100) 0.31 sylaboration 107 54% 0.18 0.0013 38 45 (1–100) 17 (1–100) 0.31 sylaboration 108 65% 0.18 0.0000 45 74 (1–100) 17 (1–100) 0.31 le 125 62% 0.19 0.0000 36 40 (1–98) 17 (2–100) 0.33 le 125 62% 0.19 0.0000 36 40 (1–100) 17 (2–100) 0.10 0.40 ne marrow s	Both biopsy and aspiration	80	62%	0.23	0.361	40	46 (1–1009	14 (1–100)	0.30	(02 to 0.57)
smin 180 52% 0.06 0.000 97 47 (1-100) 9 (1-83) 0.19 smin 50 58% 0.20 0.029 33 64 (1-100) 16 (1-100) 0 (1-90) 0.29 sty about needle insertion 234 58% 0.21 0.0000 81 50 (81-100) 17 (1-100) 0.29 0.31 year 107 54% 0.18 0.0000 43 61 (3-100) 17 (1-100) 0.31 year 127 63% 0.23 0.0013 38 45 (1-100) 17 (1-100) 0.31 nale 18 0.23 0.0013 38 45 (1-100) 17 (1-100) 0.31 set 18 0.000 43 47 (1-90) 17 (1-100) 0.33 set 18 0.019 0.0000 36 40 (1-98) 17 (1-100) 0.33 set 18 0.024 0.000 36 40 (1-98) 17 (2-100) 0.33 ne marrow biopsy	BMA duration									
5 min 5 g 58% 0.20 0.029 33 64 (1–100) 16 (1–100) 0.20 0.29 sty about needle insertion 234 59% 0.21 0.0000 43 64 (1–100) 17 (1–100) 0.36 year 10 year 127 54% 0.18 0.0000 43 61 (3–100) 17 (1–100) 0.31 nale 128 6.3 0.23 0.0013 38 45 (1–100) 17 (1–100) 0.41 nale 128 0.18 0.0000 45 74 (3–100) 17 (1–100) 0.31 set 128 0.24 0.0000 45 74 (3–100) 17 (1–100) 0.33 ne marrow biopsy 87 0.19 0.0000 36 40 (1–98) 17 (2–100) 0.33 ne marrow aspiration 87 0.24 0.0000 36 44 (1–100) 16 (3–71) 0.40 0.33 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 <t< td=""><td>15 min</td><td>180</td><td></td><td>90.0</td><td>0.000</td><td>76</td><td>47 (1–100)</td><td>9 (1–83)</td><td>0.19</td><td>(06 to 0.43)</td></t<>	15 min	180		90.0	0.000	76	47 (1–100)	9 (1–83)	0.19	(06 to 0.43)
sty about needle insertion 234 59% 0.21 0.0000 81 \$0.81-100) 17 (1-100) 0.36 year 17 54% 0.18 0.0000 43 61 (3-100) 17 (1-100) 0.31 year 127 63% 0.23 0.0013 38 45 (1-100) 17 (1-100) 0.41 nale 128 62% 0.18 0.0000 45 74 (3-100) 17 (1-100) 0.33 le 125 62% 0.19 0.0000 36 40 (1-98) 17 (2-100) 0.38 ne marrow biopsy 87 61% 0.000 36 40 (1-98) 17 (2-100) 0.38 ne marrow aspiration 67 57% 0.22 0.0000 34 46 (1-100) 16 (3-71) 0.40 nh biopsy and aspiration 80 59% 0.14 0.082 27 (5 (3-100) 15 (2-100) 0.50	>15 min	50		0.20	0.029	33	64 (1–100)	16 (1–100)	0.29	(05 to 0.58)
cian total 234 59% 0.21 0.0000 81 50 (81-100) 17 (1-100) 0.36 year 107 54% 0.18 0.0000 43 61 (3-100) 17 (2-100) 0.31 year 127 63% 0.23 0.0013 38 45 (1-100) 17 (1-100) 0.41 le 128 62% 0.19 0.0000 45 74 (3-100) 17 (1-100) 0.33 of BMA 12 62% 0.19 0.0000 36 40 (1-98) 17 (2-100) 0.38 ne marrow biopsy 87 61% 0.000 36 40 (1-98) 17 (2-100) 0.38 ne marrow spiration 67 57% 0.000 34 46 (1-100) 16 (3-71) 0.40 nh biopsy and aspiration 87 0.14 0.082 27 (3-100) 15 (2-100) 0.50	Anxiety about needle insertion									
year 107 54% 0.18 0.0000 43 61 (3-100) 17 (2-100) 0.31 year 127 63% 0.23 0.0013 38 45 (1-100) 17 (1-100) 0.41 nale 109 56% 0.18 0.0000 45 74 (3-100) 17 (1-100) 0.30 le 125 62% 0.19 0.0000 36 40 (1-98) 17 (2-100) 0.38 of BMA ne marrow biopsy 87 61% 0.24 0.000 36 46 (7-100) 23 (1-74) 0.10 ne marrow aspiration 67 57% 0.22 0.0000 34 46 (1-100) 16 (3-71) 0.40 nh biopsy and aspiration 80 59% 0.14 0.082 25 75 (3-100) 15 (2-100) 0.50	Physician total	234	%65	0.21	0.0000	81	50 (81–100)	17 (1–100)	0.36	(0.00-0.60)
year 107 54% 0.18 0.0000 43 61 (3-100) 17 (2-100) 0.31 year 127 63% 0.23 0.0013 38 45 (1-100) 17 (1-100) 0.41 nale 128 62% 0.18 0.0000 45 74 (3-100) 17 (1-100) 0.30 le 128 62% 0.19 0.0000 36 40 (1-98) 17 (2-100) 0.38 ne marrow biopsy 87 61% 0.004 25 64 (7-100) 23 (1-74) 0.10 ne marrow spiration 67 57% 0.0000 34 46 (1-100) 16 (3-71) 0.40 nh biopsy and aspiration 80 0.14 0.082 25 75 (3-100) 15 (2-100) 0.50	Age									
1year 127 63% 0.23 0.0013 38 45 (1–100) 17 (1–100) 0.41 nale 109 56% 0.18 0.0000 45 74 (3–100) 17 (1–100) 0.30 le 125 62% 0.19 0.0000 36 40 (1–98) 17 (2–100) 0.38 ne marrow biopsy 87 61% 0.24 0.004 25 64 (7–100) 23 (1–74) 0.10 ne marrow aspiration 67 57% 0.22 0.0000 34 46 (1–100) 16 (3–71) 0.40 nh biopsy and aspiration 80 59% 0.14 0.082 25 (75 (3–100) 15 (2–100) 0.50	60 year	107	54%	0.18	0.0000	43	61 (3–100)	17 (2–100)	0.31	(07 to 0.60)
nale 109 56% 0.18 0.0000 45 74 (3-100) 17 (1-100) 0.30 le 125 62% 0.19 0.0000 36 40 (1-98) 17 (2-100) 0.38 of BMA ne marrow biopsy 87 61% 0.24 0.004 25 64 (7-100) 23 (1-74) 0.10 ne marrow aspiration 67 57% 0.22 0.0000 34 46 (1-100) 16 (3-71) 0.40 nh biopsy and aspiration 80 59% 0.14 0.082 22 75 (3-100) 15 (2-100) 0.50	>60 year	127	63%	0.23	0.0013	38	45 (1–100)	17 (1–100)	0.41	(0.06-0.66)
w biopsy 65 0.18 0.0000 45 74 (3-100) 17 (1-100) 0.39 w biopsy 87 61% 0.019 36 40 (1-98) 17 (2-100) 0.38 w aspiration 87 61% 0.000 34 46 (1-100) 16 (3-71) 0.40 and aspiration 80 59% 0.14 0.082 22 75 (3-100) 15 (2-100) 0.50	Sex									
w biopsy 87 62% 0.19 0.0000 36 40 (1–98) 17 (2–100) 0.38 w aspiration 67 57% 0.22 0.000 34 46 (1–100) 16 (3–71) 0.40 and aspiration 80 59% 0.14 0.082 22 75 (3–100) 15 (2–100) 15 (2–100) 0.50	Female	109	%95	0.18	0.0000	45	74 (3–100)	17 (1–100)	0.30	(05 to 0.58)
w biopsy 87 61% 0.24 0.004 25 64 (7–100) 23 (1–74) 0.10 w aspiration 67 57% 0.22 0.0000 34 46 (1–100) 16 (3–71) 0.40 and aspiration 80 59% 0.14 0.082 22 75 (3–100) 15 (2–100) 0.50	Male	125	62%	0.19	0.0000	36	40 (1–98)	17 (2–100)	0.38	(0.01-0.65)
ion 67 57% 0.22 0.0000 34 46 (1–100) 15 (2–174) 0.010 0.10 attion 80 59% 0.14 0.082 22 75 (3–100) 15 (2–100) 0.50	Type of BMA									
67 57% 0.22 0.0000 34 46 (1–100) 16 (3–71) 0.40 on 80 59% 0.14 0.082 22 75 (3–100) 15 (2–100) 0.50	Bone marrow biopsy	87	61%	0.24	0.004	25	64 (7–100)	23 (1–74)	0.10	(16 to 0.41)
80 59% 0.14 0.082 22 75 (3–100) 15 (2–100) 0.50	Bone marrow aspiration	29	21%	0.22	0.0000	34	46 (1–100)	16 (3–71)	0.40	(08 to 0.71)
	Both biopsy and aspiration	80	%65	0.14	0.082	22	75 (3–100)	15 (2–100)	0.50	(0.06-0.77)

Variable	и	P(A) ^a	Kappa	$P(A)^d$ Kappa b McNemar	VAS, n	Patient VAS, median (range)	VAS, n Patient VAS, median (range) Nurse/physician, median (range) $_{\rm ICC}d$	p^{OOI}	95% CI
15 min	182	28%	0.19	0.0000	57	57 47 (1–100)	13 (1–100)	0.31	0.31 (06 to 0.59)
>15 min	50	%09	0.23	0.0442	24	24 70 (4–100)	34 (3–100)	0.41	(0.03-0.69)

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^aProportions of agreement P(A).

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bKappa corrects for the eventuality that agreement could occur by chance alone.

 $_{\rm C}^{\rm c}$ Test marginal homogeneity between ratings of occurrence of anxiety among patients versus health-care professionals.

dAgreement between the patients' and the health-care professionals' scoring of intensity of anxiety by using VAS was evaluated with single-measure intra-class correlation (ICC).