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► To cite this version:

Candy Guiguet-Auclair, Baptiste Boyer, Keltoume Djabour, Mehdi Ninert, Estelle Verneret-Bord, et al.. Validation of the French Women Abuse Screening Tool to routinely identify intimate partner violence. *European Journal of Public Health*, inPress, 10.1093/eurpub/ckab115 . hal-03389795

HAL Id: hal-03389795

<https://uca.hal.science/hal-03389795v1>

Submitted on 21 Oct 2021

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Guiguet-Auclair C, Boyer B, Djabour K, Ninert M, Verneret-Bord E, Vendittelli F, Debost-Legrand A. Validation of the French Women Abuse Screening Tool to routinely identify intimate partner violence. Eur J Public Health. 2021 Aug 21:ckab115. doi: 10.1093/eurpub/ckab115. Epub ahead of print. PMID: 34417819.

Validation of the French Women Abuse Screening Tool (WAST) to routinely identify intimate partner violence

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ABSTRACT

Background: Health care professionals strongly underestimate prevalence of intimate partner violence (IPV), and a few of them think that they screen and refer victims appropriately for assistance. The aim of this study was to cross-culturally validate a French version of the Woman Abuse Screening Tool (WAST).

Methods: A multicenter case-control study was performed in the forensic medicine unit of the University Hospital and two offices of the women's rights association in France. Abused and non-abused women self-completed the WAST and a questionnaire assessing their level of comfort in responding to the WAST during the study and during a hypothetical consultation with a physician in primary care. We analyzed the psychometric properties and screening performance of the WAST.

Results: Respondent acceptability was very good, with response rates exceeding 95%. The WAST had a good internal consistency (Cronbach α coefficient = 0.95). Its screening performance with a cut-off score of 5 was excellent: area under the ROC curve was 0.99, sensitivity 97.7%, specificity 97.1%, positive predictive value 97.2% and negative predictive value 97.7%. The levels of comfort were significantly lower among abused compared with non-abused women. Both groups of women were more comfortable answering the WAST during the study than in a hypothetical consultation.

Conclusion: The French version of the WAST was found to be a well-accepted and valid screening tool for routine use in IPV. It may help health care professionals to detect women experiencing abuse early and to refer them more quickly to specific assistance.

Key words: screening, intimate partner violence, WAST, accuracy

INTRODUCTION

Intimate partner violence (IPV) is well recognized as a major public health problem. ¹ IPV prevalence in Europe is estimated to exceed 20% in women aged 15 years and older. ² In France, every year, almost 220 000 women aged 18 years and older are victims of physical and/or sexual violence by their current or former partner: one woman is killed every three days. ³ It accordingly appears important to identify abused women as early as possible, but this is not always done in primary health care settings, even though it has been reported that this screening is generally well accepted by women, who even appear to favor generalized screening. ^{4,5}

Several studies have attempted to identify the obstacles to screening by various health professionals. ⁶ The first barrier was their lack of experience and any specific training: ^{4,7} they sometimes lack knowledge and have prejudices about IPV. Health care professionals strongly underestimate the prevalence of IPV, and a few of them think that they screen and refer victims appropriately for assistance. ^{8,9} Other studies indicate that they do not screen for it because they lack the tools and referral procedures necessary for them to provide effective care for these patients. ^{6,10} National guidelines about IPV screening have also been discordant. ¹¹

Several questionnaires have been developed to screen for IPV. ¹² To our knowledge, however, no screening tool is currently validated in French for use by health care professionals in standard medical consultations to refer victims as early as possible to local resources appropriate for their situation. For routine use in primary care settings, an effective tool must be easy to use, have a simple scoring procedure and cut-off scores, screen for all areas of abuse and have good psychometric properties. Long screening tools are too detailed to be suitable in clinical situations.

Among the brief tools suitable for clinical use, the Woman Abuse Screening Tool (WAST), an English-language questionnaire, asks about physical, psychological and sexual abuse. Developed for the family practitioners - to be practical for them, understandable and acceptable

to women,¹³ it has been used in several studies.¹² Wathen et al.¹⁴ reported sensitivity and specificity of almost 90% with a cut-off score of 4.^{12,14} Its internal consistency is good, with a Cronbach's α coefficient of 0.75.¹⁵ Acceptability is also good with more than 90% of the women stating they would be (hypothetically) or were comfortable when asked these questions by their family physician.^{13,15} Family physicians also report that they are comfortable administering the WAST and perceive this tool to be very helpful in screening for IPV.¹⁵

Our main objective was to cross-culturally validate a French version of the WAST and evaluate its psychometric properties and its performance in screening for IPV. A secondary objective was to assess women's comfort in completing the WAST during the study and a hypothetical consultation with a primary care physician.

METHODS

Study design

This multicenter case-control study took place from July 2016 through April 2019 in France. The case women had been abused, while the control women had not. All women in both groups were asked to participate voluntarily and assured their information would remain anonymous.

Participants and settings

Participants were aged 18 years or older, able to understand, speak and read French and involved in an intimate relationship with one partner for at least 12 months.

Professionals identified and approached the abused women at three different sites: the forensic medicine unit of the Clermont-Ferrand University Hospital and two offices of the women's rights association in Auvergne (*Centre d'informations des droits des Femmes et des Familles*, CIDFF). The control women were selected among the investigators' professional and

private contacts, students in postsecondary paramedical and public health faculties. Women were asked not to participate if they believed they had a history of IPV.

All participants provided informed consent. The French regional ethics committee (*Comité d’Ethique des Centres d’Investigation Clinique de l’Inter-région Rhône-Alpes-Auvergne*, CECIC, Grenoble, IRB 5921) approved the project.

Data collection

All women completed self-administered questionnaires, in a private room, the cases during an appointment with investigators, the controls during an information session about the survey. The women were left alone while they completed the questionnaire. Information leaflets pertaining to IPV and to locally available resources for women exposed to violence were distributed to the controls.

Measures

The self-completed questionnaires included:

- The WAST instrument which comprises eight items. The first two items assess difficulties in relationship between the woman and her partner. The next six items assess the woman’s experience of physical, emotional and sexual violence. Each item is rated on a 3-point Likert-like scale from 0 to 2. The total score is calculated by summing the scores of the eight items (only for women who answered all items) and ranged from 0 to 16. The higher the total score, the greater the abuse.
- A questionnaire assessing women’s level of comfort in responding to the WAST and each of its items during the study, and what they thought their level of comfort would be if they had to answer these questions during a consultation with a physician in

primary care. Ratings were based on a 5-point Likert-like scale, from 1 (not at all comfortable) to 5 (very comfortable).

- Demographic data: for women: age, employment and marital status, relationship duration, current living situation, birth country, education level, parity and pregnancy at the moment of the interview; for their partner: age, education level and employment.

Translation and cultural adaptation of the WAST

We followed established guidelines to cross-culturally adapt this instrument from English into French. Forward translations from English to French were independently performed by three French native-speaking bilingual translators fluent in English, two of them experts in IPV and one unfamiliar with this topic. Next, two English mother tongue translators fluent in French and blinded to the original English version performed backward translations. A multidisciplinary expert committee (composed of two methodologists, a language professional and two IPV experts) reviewed the process, compared the source and target versions and resolved discrepancies. The consensus French version was pretested on a sample of 20 women: 11 abused and 9 not. Their responses and comments were reviewed to check the understandability and content validity of the WAST items. The committee adopted this last version as the prefinal one (Supplementary material 1).

Statistical Analysis

All statistical analysis were performed with SAS v9.4 software (SAS Institute). Two-sided *P*-values < 0.05 were considered statistically significant. Continuous data are presented as means (standard deviations). Categorical data are presented as numbers (%).

We calculated the sample size based on a WAST sensitivity of 88% with a standard error of 0.01.¹⁴ We aimed to obtain an 86% sensitivity for the French version, corresponding to the

lower endpoint of the 95% confidence interval, with a precision of 5%. Given that our case-control study had one case for each control, we calculated that 185 subjects would be required in each group.

Characteristics of abused and non-abused women were compared with Chi-square, Fisher exact or nonparametric Mann-Whitney tests.

For the psychometric evaluation of the WAST:

1. Data completeness (to measure respondent acceptability) was determined by looking at response rates for the complete questionnaire (all eight items together) and for each item individually.
2. Descriptive statistics and score distribution were assessed: percentages were used for the distribution of each item score; the mean, standard deviation, range, median and interquartile range were used for the distribution of the WAST total score. We estimated the percentages of women with the minimum and maximum scores: a floor or ceiling effects were defined if these percentages were more than 15%.¹⁶ Chi-square (or Fisher's exact) tests were used to compare the two groups for each item rating and nonparametric Mann-Whitney tests for the total score.
3. Internal consistency was tested with Cronbach's α coefficient. Item-total consistency was analyzed to evaluate the extent of the linear relation between each item and the total score, corrected for overlap. A minimum correlation coefficient of 0.40 was considered indicative of good item-total consistency.¹⁷
4. The performance of WAST as a screening test for IPV was evaluated by a receiving operating characteristic (ROC) curve and the area under it (AUC).¹⁸ The ROC curve represents the WAST's ability to discriminate between women who have and have not experienced abuse. The AUC ranges from 0.5 to 1 with higher values indicating better accuracy.

Finally, we compared the groups for their level of comfort with the WAST with nonparametric Mann-Whitney tests.

RESULTS

Participants' characteristics

In the study, 361 women participated: 181 who had and 180 who had not been abused. Among the abused women, 39.8% had been recruited at the hospital's forensic medicine department, and 60.2% at the CIDFF.

Table 1 shows the characteristics of both groups. They differed significantly for all characteristics assessed except age (of women and their partners) and pregnancy. Abused women were more frequently separated or divorced, and their relationships with their current partners were of shorter duration ($P = 0.03$). Abused women more often did not live with their partner ($P < 0.0001$), were more likely to have been born in a foreign country ($P = 0.0002$) and to have children ($P = 0.008$). Moreover, 31.4% of the abused women lived in single-parent households compared with 4.1% of those not abused ($P < 0.0001$).

Data completeness and WAST score distributions

The response rate to all eight WAST items was 97.5% (97.8% of the abused women and 97.2% of those not abused). For each item, response rates ranged from 97.8% to 99.4% among abused women and from 98.9 to 100% among the others. No ceiling effect was found, but a floor effect for the total score was observed among the non-abused women: 61.7% scored the minimum zero points.

Table 2 shows the distribution of each WAST item and the total score. Significant differences were found between women who had and had not experienced abuse for each item ($P < 0.0001$). Of the non-abused women, 97.8%, 93.3% and 99.4% reported that they had never been abused physically, emotionally or sexually, respectively; compared with 12.4%, 5.6% and

70.2% in the abused group. The mean total score was significantly higher in the abused group ($P < 0.0001$).

Internal consistency of the WAST

The French version showed good internal consistency, with a Cronbach's α coefficient of 0.95 (0.81 in the abused group and 0.79 in the non-abused group) (Table 3). Corrected item-total correlations ranged from 0.50 to 0.88 and were all significant.

Screening performance of the WAST

The area under the ROC curve was 0.99 (95% CI, 0.98-1.00), showing excellent discrimination by the total score. A cut-off point of five yielded optimal results with a sensitivity of 97.7%, a specificity of 97.1%, a positive predictive value of 97.2% and a negative predictive value of 97.7%. With the use of this cut-off, true victims of violence would be 34.2 times more likely to be classified as abused than true non-victims and true non-victims only 0.02 times more likely to be classified as abused than a true victim.

Patient comfort with the WAST

Table 4 presents the women's ratings of comfort in answering the WAST questionnaire and each of its items during the study and during a hypothetical consultation with a physician in primary care. Comfort was significantly lower among abused compared with non-abused women. Both groups of women were more comfortable answering these questions during the study than in a hypothetical consultation.

DISCUSSION

The French cross-cultural validation of the WAST demonstrated good validity and screening performance for IPV with excellent discrimination between the women with and without experience of IPV.

Respondent acceptability was very good, with response rates exceeding 95% in both groups for every item. Earlier research has indicated that women are fairly favorable to studies of IPV.^{19,20} These high response rates confirm that women are more reassured by approaches providing confidentiality and privacy, for example, allowing them to complete questionnaires alone in private settings.^{20,21}

The Cronbach α coefficient of 0.95 confirmed the WAST's good internal consistency and was higher than those obtained in the original study^{13,15} or in the Spanish or Indonesian validation studies.^{22,23} The corrected item-total correlations of the WAST exceeded 0.40; to our knowledge, they have not previously been studied.

The ROC analysis yielded a cut-off score of five to discriminate between women with and without experience of abuse. Both sensitivity and specificity exceeded 95%. The prevalence of IPV in France is estimated at 26% in the general population,² so that the positive and negative predictive values of the WAST are nearly 90%. The largest study using the WAST with a cut-off score of four reported a sensitivity of 87% and a specificity of 89% in a population of women from various clinical settings.^{14,15} Another study in Indonesia reported a sensitivity of 41.9% and a specificity of 96.8% with a cut-off score of four.²³

In our study, the women in the abused group were single mothers much more often than the general population of French women (31.4% versus 13.1%), and they had a more vulnerable occupational status, with a higher unemployment rate (31.1% versus 7.8%).²⁴ Their education level was nonetheless similar to that of women of this age group in France. They may therefore belong to a particular category of IPV victims; the data about the association between

socioeconomic status and IPV are contradictory.^{2,15,25,26} The abused women in our study were older than those in other studies. Nonetheless, the older women in this study reported less IPV than younger women, as in the literature.^{2,27} These points, as well as the more frequent socioeconomic difficulties among the abused women, may be related to the recruitment procedure: two-thirds of the abused women were recruited from the CIDFF (women's rights association). Its principal mission is to support women seeking access to jobs and occupational training. However, Costa et al.²⁶ also found that a low level of education and disadvantaged socio-economic status were associated with IPV. Brown et al.¹³ and Wathen et al.¹⁴ found differences between abused and non-abused women according to marital status and socio-economic status, as in our study.

Our study showed that abused women were less comfortable than their non-abused counterparts in answering the WAST questionnaire. Their level of discomfort was still higher for a hypothetical face-to-face consultation with a physician in primary care, as previously reported.^{13,15,22,28} The levels of comfort for hypothetical consultations in our study were lower than those reported by Brown et al.^{13,15} but higher than in Fogarty et al..²² This result underlines the disadvantage of screening by health care professionals, especially by those in private practice.²⁹ Physicians must establish a climate of confidence and respect to be able to approach this issue; women look to physicians for help more often than to other professionals.²⁹⁻³¹ The training of health care professionals combined with their use of effective tools appears to be a lever that enables useful management of victims.³⁰

Our study has some limitations. First, we do not know the women's response rates: how many women were approached for eligibility, how many were eligible, how many refused to participate and why. So, we could not compare the characteristics of respondents and non-respondents. However, our recruitment was based on the sample-size achievement. We did not reach the planned sample size of 185 women per group. Nonetheless, post-hoc analysis showed

that sensitivity was estimated with a precision of 2% compared with the 5% hypothesized in our sample size calculation.

We did not study the level of comfort of the health care professionals using the WAST, as Brown et al.¹⁵ did. The usefulness of WAST as perceived by professionals remains to be evaluated.

Our study included only women with a clear history of abuse in the abused group, and we discouraged women with such a history from participating in the control group. Accordingly, the performance of the WAST may be overestimated in our sample compared with the general population. Moreover, some women among controls were recruited from the investigators' professional and private contacts. A declaration bias due to social desirability could exist as contacts could hide abuse. However, less than ten close contacts were finally recruited in the control group so that misclassification bias may hardly occur.

Future research is needed. Our results must be confirmed in a community sample. Moreover, screening is only a first stage and cannot be effective until it is accompanied by measures appropriate for these women such as helping the women develop a safety plan and referring them to appropriate service providers.^{4,32} Health care professionals' knowledge about IPV and their ability to aid victims must be assessed if appropriate training is to be developed. This training must aim to meet two objectives: first, to learn to use screening tools such as the WAST to identify victims as early as possible; and second, to master the best procedures for referring these women to appropriate assistance to remove or reduce their exposure to violence and improve their QoL.⁴

In summary, the French version of the WAST was found to be a well-accepted and valid screening tool for use in IPV. Its screening performance with a cut-off score of 5 was excellent. WAST may help health care professionals to detect women experiencing abuse early and to refer them more quickly to specific assistance.

Acknowledgments

The authors thank the CIDFF and the forensic medical department for participating in this study.

Funding

This work was supported by the *Conseil Régional d'Auvergne*.

Conflict of Interest

None declared.

Key points

- The French version of the woman abuse screening tool (WAST) is validated
- The WAST cut-off score was established at 5 in the French version
- Screening performance of the WAST is excellent with a sensitivity over 95%.
- Women feel uncomfortable reporting abuse in primary consultation

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Table 1: Characteristics of abused and non-abused women

	Abused women	Non-abused women	
	(n = 181)	(n = 180)	P Value
Woman's age (years), mean \pm SD	37.9 \pm 11.0	37.9 \pm 11.8	0.84
Partner's age (years), mean \pm SD	41.2 \pm 11.8	40.1 \pm 12.9	0.24
Marital status, <i>N</i> (%)			0.0002
Live-in partnership	62 (34.4)	67 (37.4)	
Married	92 (51.1)	108 (60.3)	
Separated / divorced	26 (14.4)	4 (2.2)	
Length of current relationship (years), mean \pm SD	11.8 \pm 9.6	14.4 \pm 11.0	0.03
Currently living with partner, <i>N</i> (%)	120 (67.4)	156 (86.7)	<0.0001
Born outside France, <i>N</i> (%)	28 (15.6)	7 (3.9)	0.0002
Children, <i>N</i> (%)	143 (79.9)	121 (67.6)	0.008
Currently pregnant, <i>N</i> (%)	8 (4.5)	7 (4.0)	0.81
University education level, <i>N</i> (%)	72 (40.9)	144 (80.0)	<0.0001
Employed, <i>N</i> . (%)	122 (68.9)	173 (97.2)	<0.0001
Partner employed, <i>N</i> (%)	138 (80.2)	168 (93.9)	<0.0001

Table 2: WAST item responses and total score

	Abused women	Non-abused women	
	(n = 181)	(n = 180)	P Value
WAST total score, mean ± SD	10.5 ± 2.9	0.8 ± 1.4	<0.0001
Range	0 - 16	0 - 10	
Median [interquartile range]	11 [9 – 12]	0 [0 – 1]	
WAST items			
1. In general, how would you describe your relationship, <i>N</i> (%)			<0.0001
A lot of tension	96 (53.3)	1 (0.6)	
Some tension	80 (44.4)	22 (12.4)	
No tension	4 (2.2)	155 (87.1)	
2. Do you and your partner work out arguments with, <i>N</i> (%)			<0.0001
Great difficulty	100 (55.9)	0	
Some difficulty	77 (43.0)	26 (14.4)	
No difficulty	2 (1.1)	154 (85.6)	
3. Do arguments ever result in you feeling down or bad about yourself, <i>N</i> (%)			<0.0001
Often	140 (77.8)	2 (1.1)	
Sometimes	38 (21.1)	50 (27.9)	
Never	2 (1.1)	127 (71.0)	

4. Do arguments ever result in hitting, kicking, or pushing, <i>N (%)</i>			<0.0001
Often	41 (22.9)	0	
Sometimes	111 (62.0)	2 (1.1)	
Never	27 (15.1)	177 (98.9)	
5. Do you ever feel frightened by what your partner says or does, <i>N (%)</i>			<0.0001
Often	100 (56.2)	1 (0.6)	
Sometimes	73 (41.0)	20 (11.2)	
Never	5 (2.8)	158 (88.3)	
6. Has your partner ever abused you physically, <i>N (%)</i>			<0.0001
Often	32 (18.1)	0	
Sometimes	123 (69.5)	4 (2.2)	
Never	22 (12.4)	176 (97.8)	
7. Has your partner ever abused you emotionally, <i>N (%)</i>			<0.0001
Often	119 (66.9)	0	
Sometimes	49 (27.5)	12 (6.7)	
Never	10 (5.6)	167 (93.3)	

8. Has your partner ever abused you sexually, <0.0001

N (%)

Often	10 (5.6)	0
Sometimes	43 (24.2)	1 (0.6)
Never	125 (70.2)	179 (99.4)

Table 3: Internal consistency and corrected item-total correlations of the WAST

	Abused women (n = 181)	Non-abused women (n = 180)	Total (n = 361)
Cronbach's α	0.81	0.79	0.95
WAST items			
1. Relationship tension	0.60	0.43	0.88
2. Difficulty working out arguments	0.52	0.51	0.87
3. Arguments result in feeling bad about self	0.44	0.51	0.85
4. Arguments result in hitting, etc.	0.56	0.41	0.84
5. Frightened by partner (words or actions)	0.57	0.58	0.88
6. Physical abuse	0.54	0.49	0.86
7. Emotional abuse	0.51	0.47	0.87
8. Sexual abuse	0.40	0.57	0.50

Table 4: Women levels of comfort completing the WAST during this research and during a hypothetical consultation with a physician in primary care (range 1 - not all comfortable to 5 - very comfortable)

	Research context			Hypothetical consultation in primary care context		
	Abused women (n = 181)	Non-abused women (n = 180)	<i>P</i> Value	Abused women (n = 181)	Non-abused women (n = 180)	<i>P</i> Value
WAST questionnaire overall, mean ± SD	3.2 ± 1.1	4.2 ± 0.9	<0.0001	2.6 ± 1.2	3.9 ± 1.0	<0.0001
WAST items, , mean ± SD						
1. Relationship tension	3.2 ± 1.2	4.4 ± 0.9	<0.0001	2.7 ± 1.1	4.1 ± 1.0	<0.0001
2. Difficulty working out arguments	3.0 ± 1.3	4.3 ± 0.9	<0.0001	2.5 ± 1.2	4.1 ± 1.0	<0.0001
3. Arguments result in feeling bad about self	2.8 ± 1.4	4.2 ± 1.0	<0.0001	2.4 ± 1.2	4.0 ± 1.0	<0.0001
4. Arguments result in hitting, etc.	2.8 ± 1.3	4.6 ± 0.8	<0.0001	2.4 ± 1.2	4.2 ± 1.0	<0.0001
5. Frightened by partner (words or actions)	2.8 ± 1.3	4.5 ± 0.9	<0.0001	2.5 ± 1.2	4.2 ± 1.0	<0.0001
6. Physical abuse	2.9 ± 1.3	4.6 ± 0.8	<0.0001	2.4 ± 1.2	4.3 ± 1.0	<0.0001
7. Emotional abuse	2.8 ± 1.4	4.5 ± 0.9	<0.0001	2.4 ± 1.3	4.2 ± 1.0	<0.0001
8. Sexual abuse	3.0 ± 1.3	4.6 ± 0.8	<0.0001	2.5 ± 1.4	4.3 ± 1.0	<0.0001

Supplementary material 1 : French version of the WAST

Questionnaire WAST

Ces questions portent sur les 12 derniers mois.

1. **En général, comment décririez-vous votre relation avec votre conjoint ?**
 Très tendue Assez tendue Sans tension
2. **Comment vous et votre conjoint arrivez-vous à résoudre vos disputes ?**
 Très difficilement Assez difficilement Sans difficulté
3. **Les disputes avec votre conjoint font-elles que vous vous sentez rabaissé(e) ou que vous vous sentez dévalorisé(e) ?**
 Souvent Parfois Jamais
4. **Les disputes avec votre conjoint se terminent-elles par le fait d'être frappée, de recevoir des coups de pieds ou d'être poussée (bousculée)?**
 Souvent Parfois Jamais
5. **Vous êtes-vous déjà sentie effrayée par ce que votre conjoint dit ou fait ?**
 Souvent Parfois Jamais
6. **Votre conjoint vous a-t-il déjà maltraité physiquement ?**
 Souvent Parfois Jamais
7. **Votre conjoint a-t-il déjà abusé de vous psychologiquement ?**
 Souvent Parfois Jamais
8. **Votre conjoint a-t-il déjà abusé de vous sexuellement ?**
 Souvent Parfois Jamais

Scoring

Item 1 :

Très tendue = 2 points ; Assez tendue = 1 point ; Sans tension = 0 point

Item 2 :

Très difficilement = 2 points ; Assez difficilement = 1 point ; Sans difficulté = 0 point

Items 3 à 8 :

Souvent = 2 points ; Parfois = 1 point ; Jamais = 0 point

Score total : somme des scores des 8 items (compris entre 0 et 16)

<p>Possible présence de violences conjugales : score total ≥ 5 (à confirmer au moyen d'une consultation dédiée).</p>
