The development of the AWIN welfare assessment protocol for donkeys

O desenvolvimento do protocolo de avaliação de bem-estar AWIN (Animal Welfare Indicators) para jumentos

Emanuela Dalla Costa[1] ; Francesca Dai[1] ; Leigh Margaret Anne Murray[2]; Simona Cannas[1] ; Elisabetta Canali[1] ; Adroaldo José Zanella[3] ; Michela Minero[1]

[1] Università degli Studi di Milano, Dipartimento di Medicina Veterinaria, Milan, Italy
[2] Cambridge Education Group (Digital), Cambridge, United Kingdom
[3] Universidade de São Paulo, Faculdade de Medicina Veterinária e Zootecnia, Departamento de Medicina Veterinária Preventiva e Saúde Animal, Pirassununga – SP, Brazil

ABSTRACT

The donkey population has increased in the last 10 years, with an estimated 50 million donkeys currently worldwide. Donkey welfare, meanwhile, is an increasing global concern that receives close public scrutiny. However, multiple challenges are surrounding how donkey welfare is assessed and recorded. The Animal Welfare Indicators (AWIN) project is the first project, funded by the European Commission, intended to improve donkey welfare by developing a scientifically sound and practical on-farm welfare assessment protocol. The present study describes the procedure for the development of the AWIN welfare assessment protocol for donkeys: 1) selection of promising welfare indicators; 2) research to cover gaps in knowledge; 3) stakeholder consultation; 4) testing the prototype protocol on-farm. The proposed two-level strategy improved on-farm feasibility, while the AWIN donkey app enables the standardized collection of data with prompt results. Although limitations are linked with a relatively small reference population, the AWIN welfare assessment protocol represents the first scientific and standardized approach to evaluate donkey welfare on-farm.

Keywords: AWIN protocol. Animal-based measure. Donkey welfare. Welfare assessment. Welfare indicator.

RESUMO

Na última década, a população de jumentos vem aumentando; estima-se que existam aproximadamente 50 milhões de em todo o mundo. O bem-estar dos jumentos é uma preocupação global crescente, que recebe um escrutínio público próximo. No entanto, existem vários desafios em torno de como o bem-estar do jumento é avaliado e registrado. O projeto Indicadores de Bem-Estar Animal (AWIN) foi o primeiro projeto, financiado pela Comissão Europeia, destinado a melhorar o bem-estar dos jumentos, desenvolvendo um protocolo de avaliação do bem-estar cientificamente válido e prático na fazenda. O presente estudo descreve o procedimento para o desenvolvimento do protocolo de avaliação de bem-estar AWIN para jumentos: 1) seleção de indicadores promissores de bem-estar; 2) pesquisa para cobrir lacunas no conhecimento; 3) consulta às partes interessadas; 4) testando o protocolo do protótipo em fazendas. A estratégia proposta em dois níveis de avaliação melhorou a viabilidade na fazenda, além disso, o aplicativo AWIN donkey permite coletar dados de maneira padronizada e mostrar resultados rapidamente. Embora a limitação esteja ligada a uma população de referência relativamente pequena, o protocolo de avaliação de bem-estar do AWIN representa a primeira abordagem científica e padronizada para avaliar o bem-estar de jumentos em fazendas.

Palavras-chave: Protocolo AWIN. Medida de origem animal. Bem-estar de jumentos. Avaliação do bem-estar. Indicador do bem-estar.

Correspondence to:
Emanuela Dalla Costa
Università degli Studi di Milano, Dipartimento di Medicina
Veterinaria
Via Celoria 10
20133, Milano, Italy
e-mail: emanuela.dallacosta@unimi.it

Introduction

Donkey's popularity has grown internationally in the last 10 years. Currently, there is an estimated 50,453,888 donkeys worldwide, 2,843,306 throughout South America, and 822,255 in Brazil, while a population of about 395,910 donkeys is estimated in Europe (Food and Agriculture Organization of the United Nations, 2018). Donkeys are kept for different purposes. In developing countries, they are still used as working animals contributing directly and indirectly to people's livelihoods (Dai et al., 2020; Ghulam et al., 2014; Kidanmariam, 2004; McLean et al., 2012; Shah et al., 2019). Elsewhere, they are kept as pets, or used for leisure activities, therapy programs, or milk and meat production (Dai et al. 2016, 2018, 2020; Thiemann & Foxcroft, 2016). Donkeys are also bred for the production of Ejiao, a Chinese remedy made using donkey skin (The Donkey Sanctuary, 2019). As donkeys are employed for various activities, their management can differ considerably and, also, for this reason, their welfare is an increasing cause of concern, which receives close public scrutiny (Dai et al., 2020; Raw et al., 2020). There are multiple challenges surrounding how donkey welfare is assessed and recorded (Dai et al., 2020). In the last decade, a variety of welfare assessment protocols have been developed and validated for use on the donkeys of specific categories, such as working donkeys (see Hockenhull & Whay, 2014 for a review). The Animal Welfare Indicator (AWIN) was a four-year project (2011-2015) funded by the European Commission in the Seventh Framework Programme. The AWIN project aimed at developing practical on-farm welfare assessment protocols for several species and, for the first time, donkeys were included. Animal welfare varies over a continuum from very good to very poor (Broom, 2011; Broom & Johnson, 2019; Fraser, 2003) and can be measured scientifically using different measures (animal, resource, and management-based) (European Food

Safety Authority, 2012). Therefore, AWIN research was focused on developing a harmonized and scientifically sound welfare assessment protocol for donkeys centered on valid and feasible animal-based indicators (Dai et al., 2020). In 2012, the EFSA Panel on Animal Health and Welfare defined that "animal-based indicators directly relate to the animal itself rather than the environment". Therefore, they can be collected in different housing and management conditions and used to infer how the animal is affected by external circumstances (European Food Safety Authority, 2012). An animal-based welfare assessment protocol serves as a toolbox from which it is possible to select the range of measures necessary to address the specific objectives of the evaluation for that particular animal species and category at that time (European Food Safety Authority, 2012; Minero et al., 2016). The present study aims to define the procedure followed by AWIN researchers for the development of a scientifically sound and practical on-farm welfare assessment protocol for donkeys.

The Development of the AWIN Protocol for Donkeys

The procedure followed to develop the scientifically sound and practical "AWIN welfare assessment protocol for donkeys" (Dalla Costa et al., 2016) comprised different steps: 1) selection of promising welfare indicators; 2) research to cover gaps in knowledge; 3) stakeholder consultation; 4) testing the prototype protocol on-farm.

1) *Selection of promising welfare indicators*

To identify promising animal-based welfare indicators for donkeys, the relevant scientific literature was systematically reviewed (Dalla Costa et al., 2014). Twenty-two promising welfare indicators were identified and then independently evaluated for validity, reliability, and on-farm feasibility by 13 academic scientists, internationally acknowledged for their expertise in equine welfare (Dalla Costa et al., 2014). The final list included only applicable welfare indicators, specifically developed for on-farm use. These selected indicators were then classified under the four Principles and twelve Criteria developed by Welfare Quality® (Blokhuis et al., 2010). Scientists highlighted that only some indicators were considered ready for on-farm use, while for others, further research was necessary to cover gaps in knowledge.

2) *Research to cover gaps in knowledge*

A research action plan was developed by AWIN researchers to address the lack of knowledge regarding the validity, repeatability, and feasibility of some promising welfare indicators. Specific validation studies were carried

out (Dalla Costa et al., 2015; Minero et al., 2016) when no indicators were available. For example, no indicators were found to evaluate the positive emotional state, so the Qualitative Behavior Assessment (QBA) was adapted and validated for its use on donkey farms (Minero et al., 2016). Following the literature review and validation studies, the AWIN welfare assessment prototype protocol for donkeys was developed and submitted to stakeholder consultation.

3) *Stakeholder consultation*

Stakeholder engagement was fostered during the AWIN project to stimulate a multidisciplinary dialogue, to recognize potential barriers to the application of the protocol in practice, and find possible solutions. Stakeholder input was proactively sought in several participatory activities. As a first step, their opinion regarding donkey welfare was gained through an open-ended online survey (Dalla Costa et al., 2019). Thirteen respondents from all over the world used the words "feeding" and "water" to indicate the most important need to guarantee donkey welfare, meaning that stakeholders considered the welfare principle "good feeding" as the most relevant for this species (Dalla Costa et al., 2019). Another frequent word was "deworming", highlighting how parasite control is paramount for assuring the good health of this species (Dai et al., 2020; Dalla Costa et al., 2019). In the second step, face-to-face consultation with 58 equine stakeholders was organized to seek feedback and understand the views of groups having a close interest in the equine sector (e.g. official veterinarians, NGOs, donkey owners, grooms, and farm managers). In particular, the final list of welfare indicators to be included in the prototype protocol was presented to listen to stakeholder concerns and have feedback as a valuable source of information that can be used to improve project design and outcomes. Stakeholders suggested that the welfare assessment should not exceed 10 min per donkey. They also agreed that "absence of prolonged thirst" and "appropriate nutrition" are the most important criteria to assess donkey welfare, as already reported by on-line survey respondents (Dalla Costa et al., 2019). Stakeholder consultation promoted an informed debate on sensitive issues regarding the acceptability of the welfare assessment process. Following the stakeholder consultation, the AWIN welfare assessment prototype protocol was ready to be tested on-farm.

4) *Testing the prototype protocol on-farm*

Twenty donkey facilities with different management conditions, situated in Italy (N=12) and the United Kingdom (N=8), were visited to test the feasibility of the prototype protocol on-farm. To be included in the study, farms had to keep donkeys for different purposes (e.g., animal-assisted therapy, milk production, meat production, leisure, sanctuary) and under different management conditions. All donkeys over 1 year (for a total of 278 donkeys of a different breed, 2–45 years) were evaluated by three assessors, who previously went through a common training period to learn how to perform and score all the indicators included in the prototype protocol. The protocol was proved to be acceptable by owners who kept donkeys for different purposes and applicable in different management conditions (Dai et al., 2016). Some concerns were raised on donkey restraining during the assessment, as in some farms lack of frequent handling could impact both the human-animal relationship and feasibility of the protocol. Following the testing of the prototype on-farm, the protocol was then refined and published (Animal Welfare Indicators, 2015), and the complete list of indicators is presented in Figure 1.

The AWIN Welfare Assessment Protocol for Donkeys

The AWIN welfare assessment protocol for donkeys is freely available and designed to provide a welfare assessment toolbox to improve the welfare of donkeys kept on-farm for different purposes. It is organized into 5 chapters and 2 appendices (Animal Welfare Indicators, 2015):

— Chapters 1, 2, 3 report the preliminary information relevant for applying the protocol on-farm (Animal Welfare Indicators, 2015);

— Chapters 4, 5 report the description, assessment, scoring system of each welfare indicator selected, the flow chart of first and second level welfare assessment, and the description of the outcomes of the assessment (Animal Welfare Indicators, 2015);

— Appendix A and B report the recording sheets to collect data on-farm (Animal Welfare Indicators, 2015).

The AWIN protocol encompasses a two-level assessment strategy. The first level is an initial screening, designed to identify welfare issues ranked by stakeholders as important; while the second level is a more comprehensive and in-depth assessment. The welfare indicators included in the first level welfare assessment are easy to apply, valid and reliable, and require minimal handling of donkeys, thus giving the advantage to focus on a rapid response, reducing the assessment length while maintaining accuracy. The second level of assessment is more time-consuming and requires donkey handling. As such, it is recommended when there is noncompliance with the current legislation or the first level outcomes underline any issues at the criterion level. The indicators included in the first and second level assessment and the sequence to follow when assessing donkeys are reported in Figure 2.

Welfare principles	Welfare criteria	Welfare indicators
Good Feeding	Appropriate nutrition	Body Condition Score
	Absence of prolonged thirst	Skin tent test
		Water availability
Good Housing	Comfort around resting	Bedding
		Shelter dimensions
	Thermal comfort	Signs of thermal stress
	Ease of movement	Not considered relevant to animals reared in extensive conditions
Good Health	Absence of injuries	Integument alterations
		Swollen joints
		Lameness
		Prolapse
	Absence of disease	Hair coat condition
		Faecal soiling
		Discharges
		Cheek palpation
		Abnormal breathing
		Coughing
	Absence of pain induced by management procedures	Signs of hoof neglect
		Signs of hot branding
Appropriate Behaviour	Expression of social behaviour	Social interaction
	Expression of other behaviours	Stereotypies
	Good human-animal relationship	Human-animal relationship tests
	Positive emotional state	Qualitative Behaviour Assessment

Figure 1 – List of welfare indicators included in the AWIN welfare assessment protocol for donkeys presented according to the four principles and twelve criteria of Welfare Quality®.

The AWIN Donkey app

The AWIN Donkey app was developed together with the protocol to improve the efficiency and reliability of data collection on-farm, reducing transcription mistakes, and enabling automatic data storage (Dai et al., 2015). The AWIN Donkey app, freely available at the Google Play store, allows the user to easily collect first and second level welfare assessment data and store information on their device (Figure 3a). Data can also be downloaded in CVS or XLSX format, to be analyzed on a computer. The AWIN researchers developed the AWIN Donkey app taking into account the necessity to report the outcomes of the assessment to the donkey owner. For this reason, the app enables the user to deliver an immediate visual output about the welfare status of the assessed animals. Data are

displayed in bar charts (Figure 3b) and the position of the assessed farm is highlighted in comparison with the median value of the reference population. Besides increasing efficiency and transparency of the assessment process, the possibility of using an app allows opening a dialogue with owners about the output of the assessment and actions needed to improve the welfare of animals (Dai et al., 2015).

Beyond the AWIN Project

Welfare assessment encompassing valid indicators is a fundamental component for the effective safeguarding of donkey welfare in different housing and management conditions. The approach adopted in the AWIN project and summarized in this paper enabled scientists to deliver a comprehensive but not complex welfare assessment
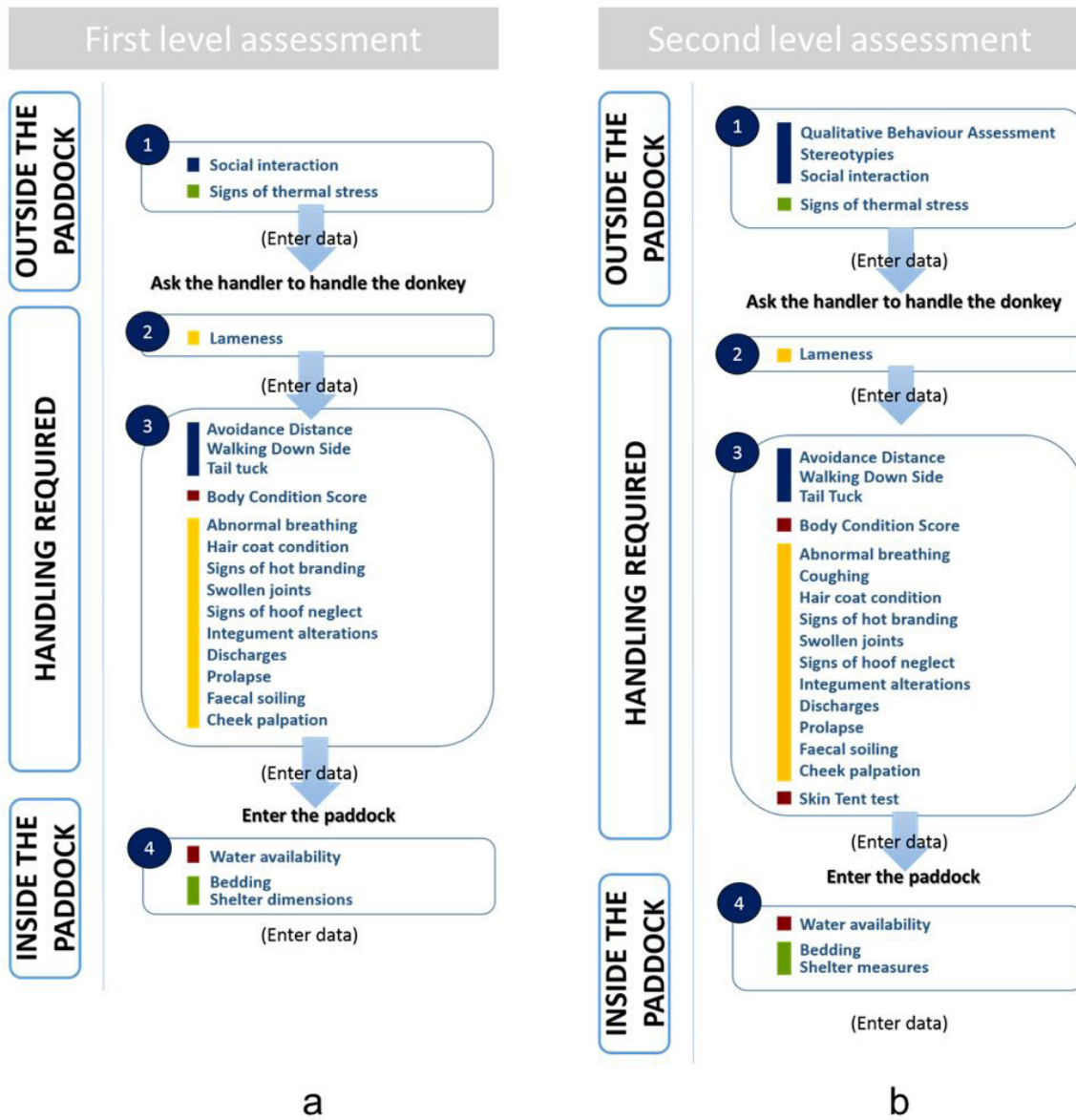
Figure 2 – Selected welfare indicators included in the first (a) and second (b) level of the AWIN welfare assessment protocol for donkeys. The indicators are presented in the order they are evaluated on-farm.
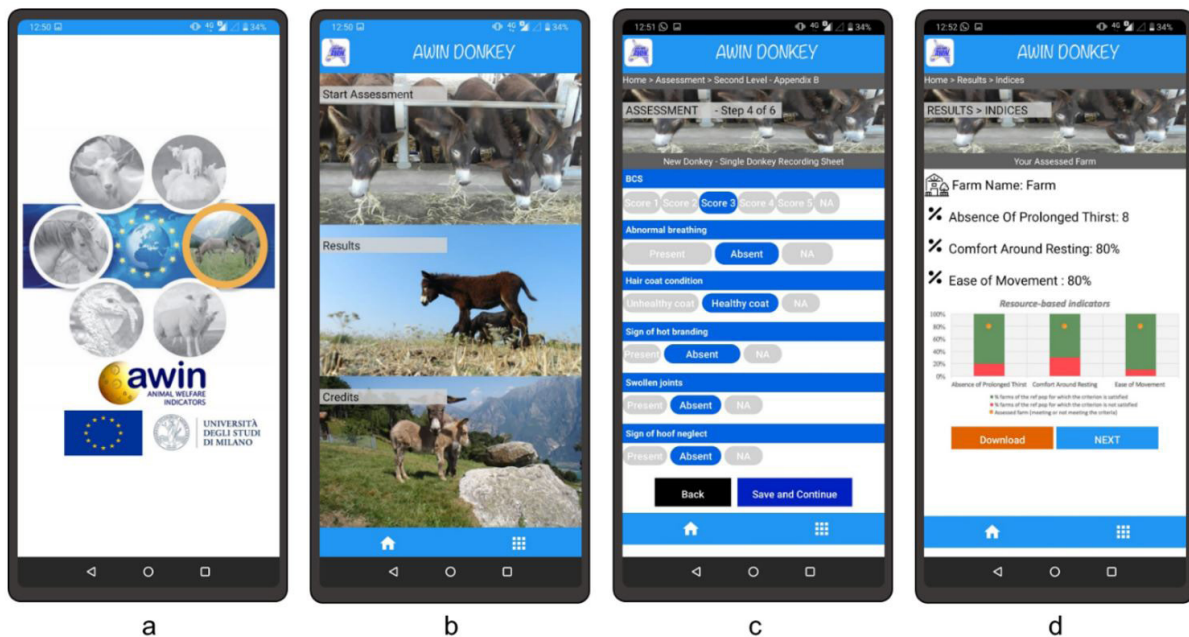

Figure 3 – Screenshots of the AWIN Donkey app. (a) opening screen; (b) main menu; (c) data entry page; (d) results page.

protocol for donkeys, which includes animal-based indicators derived from scientific literature or developed within the AWIN project and published in peer-reviewed scientific journals (Dai et al., 2016). AWIN is been the first European research project applying a scientifically sound process to develop a welfare assessment protocol for donkeys. One of the peculiar aspects was the involvement of stakeholders from the beginning to the end of the development of the AWIN welfare assessment protocol for donkeys. The AWIN project has been the trailblazer for expanding donkey welfare research. In the last five years, several other welfare assessment protocols have been developed (e.g. the Equid Assessment, Research and Scoping (EARS) (Raw et al., 2020), the On-Farm Welfare Assessment Tool (DuBois et al., 2018), and the Standardized Equine-Based Welfare Assessment tool (Sommerville et al., 2018). Another innovative aspect was the use of existing technology for harmonizing data collection and producing an immediate output to foster discussion with the farmer. This participatory approach had the objective to proactively involve the donkey farmers in the identification of concerns and agreeing on a strategy for improving the welfare status of their animals, which can be monitored using the AWIN Donkey app. Although limitations are linked with a relatively small reference population, the AWIN welfare assessment protocol represents the first scientific and standardized approach to evaluate donkey welfare on-farm.

Conflict of Interest

The authors declare there is no conflict of interests.

Ethics Statement

Ethical approval was not deemed necessary as this study reported a procedure to develop a welfare assessment protocol fon donkeys, and did not involve any procedures on animals or humans.

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