

【DESCRIPTION】

【Invention Title】

PROSTHESIS ORDERING SYSTEM

【Technical Field】

- [1]** The disclosure relates to a prosthesis ordering system. More particularly, the present disclosure relates to a prosthesis ordering system for ordering dental products, which are prostheses used for dental treatment in a dental clinic.

【Background Art】

- [2]** The contents described in this section merely provide background information on the present embodiment and do not constitute prior art.
- [3]** Dental treatment requires processed materials for dental treatment of a patient. For example, the dental treatment requires processed prostheses and processed implants tailored to each patient. To this end, a dental clinic writes order data for each patient's tooth and provides the written order data to a dental laboratory or an implant company for creating prosthetic materials. The order data may include data about material types and shapes used in dental products and a mutual relationship between the dental products corresponding to each tooth.
- [4]** Accordingly, a dental practitioner must record detailed records for ordering dental products for each tooth in addition to treatment records for dental treatment.
- [5]** In addition, means and methods for placing an order with each dental laboratory or each implant company are not standardized. Accordingly, dental practitioners should perform dental product orders by considering the means and methods of each dental laboratory or each implant company.
- [6]** Therefore, a system that may order dental products necessary for dental treatment based on an interface that ensures usability and user convenience is required.

【Disclosure】

【Technical Problem】

- [7] The present disclosure is directed to providing a prosthesis ordering system that includes a highly intuitive interface for displaying dental formulas for identifying teeth.
- [8] In addition, the present disclosure is directed to providing a prosthesis ordering system including an interface for selecting teeth for which a dental product order is required.
- [9] In addition, the present disclosure is directed to providing a prosthesis ordering system including an interface for setting details of a dental product order.
- [10] In addition, the present disclosure is directed to providing a prosthesis ordering system including an interface that displays a mutual relationship between dental products of each tooth.
- [11] In addition, the present disclosure is directed to providing a prosthesis ordering system including an interface that ensures usability for ordering dental products for dental treatment.
- [12] Objects of the present disclosure are not limited to the above-mentioned objects, and other objects and advantages of the present disclosure that are not mentioned may be understood by the following description and will be more clearly appreciated by embodiments of the present disclosure. In addition, it may be easily appreciated that objects and advantages of the present disclosure may be realized by means mentioned in the claims and a combination thereof.

【Technical Solution】

- [13] According to an aspect of the present disclosure, a prosthesis ordering system includes: an interface unit which provides a first interface that displays dental formulas, and a second interface that includes product information for a dental order for a first dental formula selected from the dental formulas; a storage unit which stores first data of the

first dental formula selected in the first interface, and receives product information which includes material types, ordered for dental treatment corresponding to the first dental formula, and a selection list for each of the material types; a dental formula determination unit which receives a first region selected in the first interface, generates second data of a second dental formula included in the first region, and selects the first dental formula from the dental formulas based on the first data and the second data; and an order information generation unit which generates order information for the first dental formula by using the first interface and the second interface.

- [14]** When the first data and the second data do not overlap, the dental formula determination unit may generate third data including the first data and the second data, and select the first dental formula corresponding to the third data.
- [15]** When the first data includes the second data, the dental formula determination unit may generate third data excluding the second data from the first data, and select the first dental formula corresponding to the third data.
- [16]** When the first data and the second data partially overlap, the dental formula determination unit may generate third data including the first data and the second data, and select the first dental formula corresponding to the third data.
- [17]** The order information generation unit may deactivate the display of the first dental formula included in the first interface.
- [18]** The first interface may receive input data for extracting any one of the first dental formulas, and the order information generation unit may generate first order information of a third dental formula corresponding to the input data, and the first order information may include pontic data of a processed tooth corresponding to the third dental formula.
- [19]** The interface unit may further include a third interface for receiving information about

whether a splint is present between each of the dental formulas displayed on the first interface, and the order information generation unit may generate a splint order based on input data received based on the third interface.

- [20] The dental formula determination unit may select, from the first dental formula, a fourth dental formula corresponding to first order product data selected from the product information.
- [21] The dental formula determination unit may select, from the first dental formula, a fifth dental formula corresponding to second order product data selected from the product information, and the fifth dental formula may not overlap with the fourth dental formula.
- [22] The interface unit may further include a fourth interface which corresponds to the second order product data and displays the first dental formula, and the fourth interface may deactivate the fourth dental formula.
- [23] The prosthesis ordering system may include: an interface unit which provides a first interface for displaying dental formulas, and a second interface including product information for a dental order for a first dental formula selected from the dental formulas; a storage unit which stores first data, indicating whether a first dental formula is selected at a first point in time, in the first interface , and receives the product information including material types ordered for dental treatment corresponding to the first dental formula and a selection list of each of the material types; a dental formula determination unit which receives a second dental formula selected at a second point in time after a first point in time in the first interface, generates second data indicating whether the second dental formula is selected, and updates the first dental formula in the dental formulas based on the first data and the second data; and an order information generation unit which generates order information for the first dental

formula by using the first interface and the second interface.

- [24] When the first data and the second data do not overlap, the dental formula determination unit may generate third data including the first data and the second data, and update the first dental formula based on the third data.
- [25] When the first data and the second data overlap, and the second data and pontic data of a processed tooth stored in the storage unit do not overlap, the dental formula determination unit may generate the pontic data corresponding to the second dental formula, generate third data based on the first data and the pontic data, and update the first dental formula based on the third data.
- [26] When the second data and the pontic data overlap, the dental formula determination unit may generate third data excluding the second data from the first data, and update the first dental formula based on the third data.
- [27] The order information generation unit may deactivate the display of the first dental formula included in the first interface based on the order information.
- [28] The interface unit may further include a third interface for receiving information about whether a splint is present between each of the dental formulas displayed on the first interface, and the order information generation unit may generate a splint order included in the order information based on input data received based on the third interface.
- [29] The dental formula determination unit may select, from the first dental formula, a fourth dental formula corresponding to first order product data selected from the product information, and the interface unit may further include a fourth interface for displaying the fourth dental formula corresponding to the first order product data.
- [30] The dental formula determination unit may select, from the first dental formula, a fifth dental formula corresponding to second order product data selected from the product

information, the interface unit may further include a fifth interface that displays the fifth dental formula corresponding to the second order product data, and the fifth dental formula may not overlap with the fourth dental formula.

[31] A portion of the fourth interface corresponding to the fourth dental formula may be deactivated.

[32] The interface unit may display each of the first dental formulas corresponding to each of the pieces of order information differently on the first interface.

【Advantageous Effect】

[33] According to a prosthesis ordering system of the present disclosure, it is possible to provide a highly readable interface for displaying dental formulas for identifying teeth based on positions of teeth.

[34] In addition, according to the prosthesis ordering system, it is possible to provide an interface that ensures usability for tooth selection and ordering contents for each tooth.

[35] In addition, according to the prosthesis ordering system, it is possible to provide an ordering interface tailored to dental treatment to reduce user learning limitations for medical residents.

[36] In addition, according to the prosthesis ordering system, it is possible to provide compatibility with an EMR system used for dental treatment to provide convenience and efficiency to medical doctor residents.

[37] In addition, according to the prosthesis ordering system, it is possible to display a mutual relationship of dental products applied to each tooth on an interface to increase readability of an interface for workers producing the dental products.

[38] In addition to the above-described contents, specific effects of the present disclosure will be described below while describing specific details for carrying out the following invention.

【Description of Drawings】

- [39]** FIG. 1 is a block diagram for describing a prosthesis ordering system according to some embodiments of the present disclosure.
- [40]** FIG. 2 is a drawing for describing an interface provided to generate order information of FIG. 1.
- [41]** FIG. 3 is a diagram for describing product information of FIG. 2.
- [42]** FIGS. 4A to 21B are diagrams for describing an interface unit and a dental formula determination unit of FIG. 1.
- [43]** FIGS. 22 to 27 are diagrams for describing the interface unit and dental formula determination unit of FIG. 1 according to another embodiment of the present disclosure.
- [44]** FIGS. 28 to 32B are diagrams for describing a method for generating multiple pieces of order information of a prosthesis ordering system according to another embodiment of the present disclosure.
- [45]** FIGS. 33 to 36 are diagrams for describing implant order information of a prosthesis ordering system according to another embodiment of the present disclosure.

【Mode for Disclosure】

- [46]** The terms or words used in this specification and claims should not be interpreted as limited to their general or dictionary meanings. According to the principle that an inventor may define the meaning and concept of terms or words in order to best describe his/her own invention, the technical teachings of the present disclosure should be interpreted in a manner consistent with those defined meanings and concepts. In addition, the configurations described in the embodiments and drawings described in this specification are merely one preferable embodiment implementing the present disclosure but do not represent all of the technical teachings of the present disclosure. Thus, the present disclosure should be construed as including various equivalents,

changes, and applicable examples that can replace its components at the time of filing this application.

[47] Terms used in the this specification and claims, “first,” “second,” “A,” “B” etc., may be used to describe various components, but the components are not to be interpreted to be limited to the terms. The terms are used to distinguish one component from another component. For example, the ‘first’ component may be named the ‘second’ component and the ‘second’ component may also be similarly named the ‘first’ component, without departing from the scope of the present disclosure. A term ‘and/or’ includes a combination of a plurality of related described items or any one of the plurality of related described items.

[48] Terms used in this specification and claims are used only in order to describe specific exemplary embodiments rather than limiting the present disclosure. Singular expressions are intended to include plural expressions unless the context clearly indicates otherwise. It should be understood that terms such as "include" or "have" in this application do not preliminarily exclude the presence or addition of features, numbers, steps, operations, components, parts, or combinations thereof described in the specification.

[49] Unless indicated otherwise, it is to be understood that all the terms used in the specification including technical and scientific terms have the same meaning as those that are generally understood by those who skilled in the art.

[50] It should be understood that the terms defined by the dictionary are identical with the meanings within the context of the prior art, and they should not be ideally or excessively formally defined unless the context clearly dictates otherwise.

[51] In addition, each configuration, process, process, method, etc., included in each embodiment of the present disclosure may be technically shared within a range that

does not contradict each other.

[52] Hereinafter, a prosthesis ordering system according to some embodiments of the present disclosure is described with reference to FIG. 1.

[53] FIG. 1 is a block diagram for describing a prosthesis ordering system according to some embodiments of the present disclosure.

[54] Referring to FIG. 1, a prosthesis ordering system 10 may operate in conjunction with the first user device 20 and with electronic health records (EMR) 30. The first user device 20 may be a smart device that orders dental products necessary for dental treatment using the prosthesis ordering system 10.

[55] The first user device 20 may be at least one mobile communication device (such as a mobile phone), but is not limited thereto, and may be various types of information terminals having communication ports, such as a laptop, a personal computer (PC), a personal digital assistant (PDA), a handheld PC (HPC), a web pad, and a tablet PC. The first user device 20 may access the Internet or a network using the communication port, and may transmit and receive data using the network. Here, the network may transmit data using a communication protocol set between a plurality of electronic devices. The preset communication protocol may be any one of a TCP/IP protocol, a protocol according to IEEE 802.11, and a WAP protocol. However, the present disclosure is not limited thereto.

[56] The dental product may be prosthesis ordered for dental treatment. The prosthesis may include prosthesis to be manufactured and an implant product that is a ready-made product. The EMR 30 is an electronic medical record, and may store records of dental treatment performed at a dental clinic. In addition, the first user device 20 and the EMR 30 may operate in conjunction with each other. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited

thereto.

- [57] The prosthesis ordering system 10 may include an interface unit 11, a storage unit 12, a dental formula determination unit 13, and an order information generation unit 14.
- [58] The interface unit 11 may include an interface provided to the first user device 20. For example, the interface unit 11 may include a first interface for displaying dental formulas based on positions of teeth. For example, the first interface may display dental formulas corresponding to a tooth arrangement order so that the first user device 20 may select teeth. The dental formulas may be identification values indicating a type of teeth, the number of teeth, and the tooth arrangement order. The first interface will be described below with reference to FIG. 2.
- [59] For another example, the interface unit 11 may include a second interface that provides product information for a dental order for a first dental formula selected in the first interface. The first user device 20 may select a dental prosthesis for the tooth corresponding to the first dental formula among the product information using the second interface. The product information will be described below with reference to FIGS. 2 and 3. The second interface will be described below with reference to FIG. 2.
- [60] The storage unit 12 may store first data of the first dental formula selected in the first interface. The first data may include an identification value of the dental formulas selected by the first user device 20 in the first interface.
- [61] In addition, the storage unit 120 may store the first data indicating whether the first dental formula is selected at a first point in time in the first interface. The first data may include the identification value of the dental formulas selected by the first user device 20 in the first interface.
- [62] Furthermore, the storage unit 12 may update the first data using the first dental formula

that is updated based on a second dental formula selected at a second point in time after the first point in time. The first data is described as the dental formula determination unit 13 with reference to FIGS. 4A to 22.

[63] In addition, the storage unit 12 may receive product information ordered for dental treatment corresponding to the first dental formula. For example, the product information may include material types used for dental treatment and a selection list from which each material type may be selected from a system that produces or sells products. In this case, the received product information may be included in the second interface.

[64] For another example, the storage unit 12 may receive the product information from the first user device 20. In this way, the storage unit 12 may provide the product information used in a dental clinic corresponding to the first user device 20 to the interface unit 11. That is, the interface unit 11 may generate the second interface including the product information provided from the first user device 20. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.

[65] The dental formula determination unit 13 may determine the first dental formula selected in the first interface. For example, the dental formula determination unit 13 may receive a first region selected in the first interface. Here, the first region may be a region selected by the first user device 20 by dragging a part of the first interface.

[66] The dental formula determination unit 13 may extract the second dental formula included in the first region and generate second data including whether the extracted second dental formula is selected. The second data will be described below in conjunction with the first data, with reference to FIGS. 4A to 11. The first data and the second data may be data that is distinguished based on the time or order in which

the dental formulas are selected. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.

[67] Subsequently, the dental formula determination unit 13 may select the first dental formula from the dental formulas based on the first data and the second data. Accordingly, the interface unit 11 may receive order information based on the first dental formula.

[68] In this regard, the dental formula determination unit 13 may receive the second dental formula selected at the second point in time after the first point in time in the first interface. Here, the second dental formula may be the dental formulas selected by the first user device 20 by clicking on the first interface. The click may include either a click or a double click.

[69] In addition, the first dental formula may be a dental formula selected by the user by touching a display module of the first user device 20. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.

[70] Subsequently, the dental formula determination unit 13 may generate the second data including whether the second dental formula is selected. The first data and the second data may be data that are distinguished based on the time or order in which the dental formulas are selected. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.

[71] For another example, the dental formula determination unit 13 may receive the first region selected at the second point in time after the first point in time in the first interface. Here, the first region may be the region selected by the first user device 20 by dragging a part of the first interface.

[72] Subsequently, the dental formula determination unit 13 may extract the second dental formula included in the first region and generate the second data including whether the

extracted second dental formula is selected.

[73] The dental formula determination unit 13 may update the first dental formula in the dental formulas based on the first data and the second data. Accordingly, the interface unit 11 may provide an interface to the first user device 20 based on the updated first dental formula, and receive the order information accordingly. A method of selecting a first dental formula will be described below with reference to FIGS. 4A to 27.

[74] The order information generation unit 14 may generate order information corresponding to each patient using the first interface and the second interface. The order information may include prosthesis order information and implant order information. The prosthesis order information may be order information of an embodiment in which the type of dental treatment corresponds to prosthesis. The implant order information may be order information of an embodiment in which the type of dental treatment corresponds to implant. The prosthesis order information and the implant order information are described separately for the convenience of description of the embodiment, and the order information may also include other order information required for dental treatments other than the prosthesis and implant. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.

[75] In addition, the order information generation unit 14 may also generate order information corresponding to each of a plurality of different first dental formulas of each patient. For example, the order information generation unit 14 may integrate order information corresponding to each of a plurality of different first dental formulas of a first patient to generate the order information. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.

- [76] Hereinafter, the prosthesis ordering system 10, which operates by providing the interface to the first user device 20, will be described with reference to FIGS. 2 to 36.
- [77] FIG. 2 is a diagram for describing the interface unit of FIG. 1.
- [78] Referring to FIGS. 1 and 2, the interface unit 11 may generate an interface that includes order identification information p, product information pdc, additional information os, and a first interface dfi.
- [79] The order identification information p may include data received by the prosthesis ordering system 10 in conjunction with the EMR 30 and the first user device. For example, the prosthesis ordering system 10 may receive a chart number, a patient name, a gender, an age, practitioner information, treatment date, and treatment data.
- [80] The product information pdc may include material types pre-stored in the storage unit 12 and each selection list of the material types. The product information pdc may be data received from the first user device 20. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.
- [81] The additional information os may include data received from the first user device 20 and the EMR 30. For example, the additional information os may include an oral image received from the first user device 20 or the EMR 30.
- [82] In addition, the additional information os may include order memo data m received from the first user device 20. The order memo data m may include additional requests and memos from a practitioner corresponding to the order information. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.
- [83] The first interface dfi may include an interface for displaying dental formulas df. The first interface dfi may display the dental formulas df of each tooth as numbers according to the tooth arrangement order. In addition, the first interface dfi may

display the dental formulas df by dividing the dental formulas df into four parts based on the left, right, top, and bottom. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.

[84] In addition, the first interface dfi may activate some dental formulas df so that the first user device 20 may select and release each dental formulas df.

[85] Conversely, the first interface dfi may deactivate some dental formulas df so that the first user device 20 may not select and release each dental formulas df. However, this description is merely exemplary, and the embodiments of the present disclosure are not limited thereto.

[86] Hereinafter, the product information of FIG. 2 will be described with reference to FIGS. 3A and 3B.

[87] FIGS. 3A and 3B are diagrams for describing the product information of FIG. 2.

[88] Referring to FIGS. 1 to 3B, the prosthesis ordering system 10 may display the received product information pdc on the interface and provide the received product information pdc to the first user device 20. For example, the prosthesis ordering system 10 may provide the product information pdc for each order. In this case, the first user device 20 may select first product information c1 to be ordered from the provided product information pdc. The first product information c1 may include material types and data additionally selected according to the material types.

[89] In addition, the prosthesis ordering system 10 may provide a favorite interface c2 for the first product information c1 selected by the first user device 20. In this way, the prosthesis ordering system 10 may update the product information pdc by defining the first product information c1 selected by the first user device 20 as one material type.

[90] For example, the first user device 20 may select the first product information c1, and provide a favorite request to the prosthesis ordering system 10 using the favorite

interface c2 for the selection of the first product information c1.

[91] Subsequently, the prosthesis ordering system 10 may provide interfaces pdc1 and pdc2, which include the first product information c1 included in the product information pdc, to the first user device 20.

[92] Hereinafter, a method in which the dental formula determination unit determines the dental formulas selected by the first user device in conjunction with the interface unit will be described with reference to FIGS. 4A to 11.

[93] FIGS. 4A to 11 are diagrams for describing the interface unit and the dental formula determination unit of FIG. 1.

[94] Referring to FIGS. 1 and 4A to 11, the interface unit 11 may provide the first interface (FIG. 4A) on which the dental formulas are displayed to the first user device 20. The first user device 20 may select a first region d1 from the first interface (FIG. 4A) and provide the first region d1 to the dental formula determination unit 13. Hereinafter, for convenience of description, the time point at which the first user device 20 provides the first region d1 to the dental formula determination unit 13 is described as being defined as the first point in time and the second point in time. The second point in time may be prior to the first point in time.

[95] The dental formula determination unit 13 may generate the second data of the second dental formula included in the first region d1. The second dental formula may be at least one dental formula included in the first region d1 received at the first point in time. The second data may be data in which each dental formula included in the second dental formula is selected.

[96] Subsequently, the dental formula determination unit 13 may update the first dental formula based on the first data corresponding to the second point in time, which is prior to the first point in time, and the second data corresponding to the first point in

time. The first data may include each dental formula selected based on the first region received by the dental formula determination unit 13 at the second point in time, which is prior to the first point in time.

[97] That is, the dental formula determination unit 13 may re-select and update the first dental formula based on the second dental formula selected at the first point in time and the first dental formula selected at the second point in time.

[98] Referring to FIG. 4A, for example, the first data may not include at least one dental formula. In this case, the dental formula determination unit 13 may receive the first region d1 at the first point in time and extract the second dental formula corresponding to the first region d1. For example, the second dental formula may be '6', '5', '4' and '3' included in the first region d1. The second data of the second dental formula may include '6', '5', '4', and '3' included in the first region d1.

[99] Subsequently, the dental formula determination unit 13 may calculate whether the first data and the second data overlap.

[100] Referring to FIG. 4A, the first data and the second data may not overlap. Therefore, the dental formula determination unit 13 may generate third data that includes the first data and the second data. The third data may include '6', '5', '4', and '3'. The dental formula determination unit 13 may select the dental formulas included in the third data as the first dental formula. For example, the first dental formula may include '6', '5', '4', and '3'.

[101] Accordingly, the storage unit 12 may update the first data based on the third data. For example, the first data may be updated with data included in the third data.

[102] In addition, the interface unit 11 may update the first interface based on the first dental formula selected by the dental formula determination unit 13. Referring to FIG. 4B, for example, the interface unit 11 may display each dental formula by distinguishing

the first dental formula from other dental formulas that are not selected. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.

[103] Subsequently, another example in which the dental formula determination unit 13 selects the first dental formula will be described with reference to FIGS. 5A and 5B. Hereinafter, for convenience of description, the point in time at which the first user device 20 additionally provides a second region d2 to the dental formula determination unit 13 is defined as the third point in time after the first point in time. In addition, the embodiment in which the first data of the first point in time includes '6', '5', '4', and '3', and the first dental formula of the first point in time includes '6', '5', '4', and '3' is described as an example.

[104] The dental formula determination unit 13 may receive the second region d2 at a third point in time and extract the second dental formula included in the second region d2. For example, referring to FIG. 5A, the second dental formula may be '5' and '4'.

[105] In addition, the second region d2 may be data generated by dragging on the first interface by the first user device 20.

[106] The dental formula determination unit 13 may generate the second data from which each dental formula of the second dental formula is selected. For example, the second data may be '5' and '4'.

[107] Subsequently, the dental formula determination unit 13 may calculate whether the first data and the second data overlap. Referring to FIG. 5A, the first data corresponding to the first region d1 may include the second data corresponding to the second region d2.

[108] In this regard, the dental formula determination unit 13 may generate the third data excluding the second data from the first data. That is, the dental formula

determination unit 13 may release the dental formulas corresponding to the second data. For example, referring to FIG. 5B, the third data may include '6' and '3' excluding '5' and '4' from '6', '5', '4', and '3'.

[109] Subsequently, the dental formula determination unit 13 may select the first dental formula based on the third data. For example, the first dental formula may include '6' and '3'. In this case, the storage unit 12 may update the first data based on the third data.

[110] The interface unit 11 may update the first interface based on the first dental formula selected by the dental formula determination unit 13. For example, as illustrated in FIG. 5B, the interface unit 11 may display each dental formula by distinguishing between unselected dental formulas and the first dental formula. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.

[111] Subsequently, another example in which the dental formula determination unit 13 selects the first dental formula will be described with reference to FIGS. 6A and 6B. Hereinafter, for convenience of description, the point in time at which the first user device 20 additionally provides a third region d3 to the dental formula determination unit 13 is defined as the third point in time after the first point in time. In addition, an embodiment in which the first data at the first point in time includes '6' and '3' and the first dental formula at the first point in time includes '6' and '3' will be described as an example.

[112] The dental formula determination unit 13 may receive the third region d3 at the third point in time and extract the second dental formula included in the third region d3. For example, referring to FIG. 6A, the second dental formula may include '5', '4', and '3'.

- [113] The dental formula determination unit 13 may generate the second data in which each dental formula of the second dental formula is selected. For example, the second data may be '5', '4', and '3'.
- [114] Subsequently, the dental formula determination unit 13 may calculate whether the first data and the second data overlap. Referring to FIGS. 5A to 6B, the second data and the first data may partially overlap.
- [115] In this regard, the dental formula determination unit 13 may generate the third data including the first data and the second data. For example, the third data may include '6', '5', '4', and '3' as illustrated in FIG. 6B.
- [116] Subsequently, the dental formula determination unit 13 may select the first dental formula based on the third data. For example, the first dental formula may include '6', '5', '4', and '3'. The storage unit 12 may update the first data based on the third data.
- [117] The interface unit 11 may generate an interface that distinguishes and displays the first dental formula selected by the dental formula determination unit 13 and the dental formulas that are not selected. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.
- [118] Subsequently, another embodiment of selecting the first dental formula and the product information will be described with reference to FIGS. 7A to 8.
- [119] Referring to FIGS. 7A to 8, the prosthesis ordering system 10 may receive a fourth region and first select the first dental formula. For example, the fourth region may include the dental formulas '2' and '3'.
- [120] Subsequently, the prosthesis ordering system 10 may receive the product information corresponding to the selected first dental formula. The prosthesis ordering system 10 may update the interface corresponding to the first dental formula based on the

received product information. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto. The prosthesis ordering system 10 may first receive the product information and then receive a region corresponding to the received product information. The prosthesis ordering system 10 may select the first dental formula based on the received region. For convenience of description, an embodiment in which the prosthesis ordering system 10 selects the first dental formula before receiving the product information is described.

[121] Referring to FIG. 7A, the prosthesis ordering system 10 may provide the product information pdc to the first user device 20. The prosthesis ordering system 10 may receive the fourth region d4 for selecting the first dental formula before receiving the first product information selected from the product information pdc.

[122] Referring to FIG. 7a, for example, the first user device 20 may select the fourth region d4 using the first interface without selecting the first product information from the product information pdc.

[123] Referring to FIG. 7b, the prosthesis ordering system 10 may then receive a fourth region d4 to select the first dental formula. For example, the first dental formula may include '2' and '3'. In this case, the prosthesis ordering system 10 may update the interface corresponding to the selected first dental formula before receiving the first product information. In this way, the prosthesis ordering system 10 may provide the selected first dental formula to the first user device 20.

[124] Subsequently, referring to FIG. 8, the first user device 20 may select the first product information corresponding to the first dental formula from the product information pdc and provide the prosthesis ordering system 10.

[125] Subsequently, the prosthesis ordering system 10 may update a part of the interface corresponding to the first dental formula based on the first product information.

- [126] The interface unit 11 may update the design of the dental formulas displayed on the interface based on the product information. However, this description is merely exemplary, and the embodiments of the present disclosure are not limited thereto.
- [127] Hereinafter, a method for selecting dental formulas provided by the prosthesis ordering system 10 will be described with reference to FIGS. 9 to 11.
- [128] Referring to FIGS. 9 to 11, the interface provided by the prosthesis ordering system 10 to the first user device 20 may display the dental formulas, which are identification values of teeth, based on the positions of the teeth.
- [129] Referring to FIG. 9, the updated first dental formula and first data df3 may be '7', '6', '5', '4', and '3'.
- [130] Subsequently, referring to FIG. 10, the prosthesis ordering system 10 may receive the second dental formula including '5' and generate the second data for the second dental formula. The second dental formula may be the dental formulas selected by the first user device 20 by clicking and touching. The click may include click and double-click. However, this description is merely exemplary and the embodiments of the present disclosure are not limited thereto.
- [131] Subsequently, the prosthesis ordering system 10 may calculate whether the second data and the pontic data overlap. When the second data and the pontic data do not overlap, the pontic data of the processed tooth corresponding to the second dental formula of the second data may be generated, and the third data may be generated based on the pontic data and the first data.
- [132] Pontic data df3p may be data requesting the processing of a dental product of a tooth as a tooth without an abutment. The pontic data may include each dental formula corresponding to the pontic data.
- [133] Referring to FIG. 9, for example, the first data includes '7', '6', '5', '4', and '3', and the

pontic data may have no dental formulas included.

[134] In this case, the prosthesis ordering system 10 may generate pontic data df3p for '5' because the second data and the pontic data do not overlap.

[135] That is, the first dental formula df3 may be '7', '6', '5', '4', and '3'. The first data df3 may include '7', '6', '5', '4', and '3'. In this case, the first data df3 may further include the pontic data df3p. The pontic data df3p may include '5'. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.

[136] Subsequently, the first user device 20 may reselect '5' included in the pontic data df3p. In this way, the dental formula determination unit 13 may receive the second dental formula, which is '5'.

[137] Subsequently, the dental formula determination unit 13 may generate the second data of the second dental formula. The second data may be '5'.

[138] Subsequently, the dental formula determination unit 13 may calculate whether the first data and the second data overlap. The case where the first data and the second data overlap may be the case where the second data may be included in the first data.

[139] When the first data and the second data overlap, the dental formula determination unit 13 may calculate whether the second data and the pontic data overlap.

[140] Referring to FIG. 11, when the second data and the pontic data overlap, the dental formula determination unit 13 may release the second dental formula.

[141] That is, the dental formula determination unit 13 may generate the third data excluding the second data from the first data and delete the pontic data corresponding to the second data. Accordingly, the third data may be '7', '6', '4', and '3'. The dental formula determination unit 13 may update the first dental formula based on the third data. However, this description is merely exemplary, and the embodiments of the

present disclosure are not limited thereto.

[142] Meanwhile, the prosthesis ordering system 10 may first receive the first product information selected from the product information pdc. Subsequently, the prosthesis ordering system 10 may receive the second dental formula or the first region, and display the first dental formula updated based on the second dental formula or the first region on the interface based on the first product information.

[143] Conversely, the prosthesis ordering system 10 may first receive the second dental formula or the first region, and update the interface based on the updated first dental formula using the second dental formula.

[144] Subsequently, the prosthesis ordering system 10 may receive the first product information, and update the display of the first dental formula displayed on the interface. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.

[145] Hereinafter, with reference to FIGS. 12 to 21B, a method in which the dental formula determination unit 13 receives the second dental formula, determines the first dental formula, and updates the interface in conjunction with the interface unit is described.

[146] FIGS. 12 to 21B are diagrams for describing the interface unit and the dental formula determination unit of FIG. 1 according to another embodiment of the present disclosure.

[147] The interface unit 11 may provide the first interface on which the dental formulas are displayed to the first user device 20.

[148] The first user device 20 may select the second dental formula df1 from the first interface and provide the second dental formula df1 to the dental formula determination unit 13. In this case, the user device 20 may select the second dental formula df1 by clicking or touching the second dental formula df1 on the first interface.

[149] Hereinafter, for convenience of description, the time point at which the first user device

20 provides the second dental formula df1 to the dental formula determination unit 13 is defined as the first point in time and the second point in time. The second point in time may be after the first point in time.

[150] The dental formula determination unit 13 may generate the second data of the second dental formula received at the second point in time. The second data may be data including whether the dental formulas corresponding to the second dental formula are selected.

[151] Subsequently, the dental formula determination unit 13 may update the first dental formula based on the first data corresponding to the first point in time and the second data corresponding to the second point in time. The first data may be the first dental formula updated based on the dental formulas received by the dental formula determination unit 13 at the first point in time. In addition, the first data may be an initial value with nothing selected when there are no dental formulas previously received by the dental formula determination unit 13 based on the second point in time.

[152] That is, the dental formula determination unit 13 may update the first dental formula for the second point in time based on the first dental formula selected at the first point in time and the second dental formula corresponding to the second point in time.

[153] Referring to FIG. 12, for example, the first data may not include at least one dental formula. Subsequently, the dental formula determination unit 13 may receive the second dental formula df1. The second dental formula df1 may be '6'. The second data for the second dental formula may include '6'.

[154] Subsequently, the dental formula determination unit 13 may calculate whether the first data and the second data overlap.

[155] Referring to FIG. 12, the first data and the second data may not overlap. Therefore, the dental formula determination unit 13 may generate the third data including the first

data and the second data. The third data may include '6'. The dental formula determination unit 13 may update the first dental formula based on the third data. For example, the first dental formula to be updated may be '6'.

[156] Accordingly, the storage unit 12 may update the first data based on the third data. For example, the first data may be updated with the data included in the third data.

[157] In addition, the interface unit 11 may update the first interface based on the first dental formula updated by the dental formula determination unit 13. Referring to FIG. 12, for example, the interface unit 11 may display each dental formula by distinguishing the first dental formula from other dental formulas that are not selected. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.

[158] Subsequently, referring to FIG. 13, another embodiment in which the dental formula determination unit 13 reselects the selected first dental formula and generates order information for the first dental formula is described.

[159] Referring to FIGS. 1, 12, and 13, the dental formula determination unit 13 may generate the second data of the second dental formula that the dental formula determination unit 13 receives. The second data may be data including whether the dental formulas corresponding to the second dental formula are selected. For example, the second data may be '6' included in the first data.

[160] Subsequently, the dental formula determination unit 13 may calculate whether the first data and the second data overlap. The case where the first data and the second data overlap may be the case that the second data is included in the first data.

[161] Subsequently, the dental formula determination unit 13 may calculate whether the second data and the pontic data overlap. The pontic data may be data requesting the processing of the dental product of the tooth as a tooth without an abutment. The

pontic data may include each dental formula corresponding to the pontic data.

[162] When the second data and the pontic data do not overlap, the dental formula determination unit 13 may generate the pontic data of the processed tooth corresponding to the second dental formula of the second data, and generate the third data based on the pontic data and the first data. Here, the third data may include the first data and the pontic data.

[163] Referring to FIG. 13, for example, the first data may be '6' and the pontic data may be '6'. The prosthesis ordering system 10 may update the first dental formula based on the third data. However, this description is merely exemplary, and the embodiments of the present disclosure are not limited thereto.

[164] The prosthesis ordering system 10 may display the dental formulas corresponding to pontic data on the interface using at least one of characters, symbols, and pictures. For example, referring to FIG. 13, the pontic data p may be displayed as character 'X'. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.

[165] Subsequently, referring to FIGS. 14 to 16, the prosthesis ordering system 10 that operates based on the first data including the plurality of dental formulas and the received second dental formula will be described.

[166] Referring to FIG. 14, the first dental formula and the first data df3 of the first point in time may be '7', '6', '5', '4', and '3'.

[167] Subsequently, referring to FIG. 15, the prosthesis ordering system 10 may receive the second dental formula including '5'. In this regard, the prosthesis ordering system 10 may generate the pontic data df3p for '5'.

[168] That is, the first dental formula df3 may be '7', '6', '5', '4', and '3'. The first data df3 may include '7', '6', '5', '4', and '3'. In this case, the first data df3 may further include

the pontic data df3p. The pontic data df3p may include '5'. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.

[169] Subsequently, the first user device 20 may reselect '5' included in the pontic data df3p. In this way, the dental formula determination unit 13 may receive the second dental formula, which is '5'.

[170] Subsequently, the dental formula determination unit 13 may generate the second data of the second dental formula. The second data may be '5'.

[171] Subsequently, the dental formula determination unit 13 may calculate whether the first data and the second data overlap. When the first data and the second data overlap, the second data may be included in the first data.

[172] The dental formula determination unit 13 may calculate whether the second data and the pontic data overlap when the first data and the second data overlap.

[173] When the second data and the pontic data overlap, the dental formula determination unit 13 may release the second dental formula.

[174] That is, the dental formula determination unit 13 may generate the third data excluding the second data from the first data and delete the pontic data corresponding to the second data. Accordingly, the third data may be '7', '6', '4', and '3'. The dental formula determination unit 13 may update the first dental formula based on the third data. However, this description is merely exemplary, and the embodiments of the present disclosure are not limited thereto.

[175] Hereinafter, the interface that is updated depending on whether the prosthesis ordering system 10 first receives the first product information or the second dental formula will be described with reference to FIGS. 17 to 20.

[176] Referring to FIGS. 17 and 18, the prosthesis ordering system 10 may receive the

second dental formula before the first product information.

- [177] Accordingly, the second dental formula may update the first dental formula df4 based on the received second dental formula and display the updated first dental formula df4 on the interface.
- [178] Subsequently, the prosthesis ordering system 10 may receive first product information c2 selected by the first user device 20 from the product information pdc.
- [179] The prosthesis ordering system 10 may confirm whether the first dental formula and the first data are stored, and update the interface on which the first dental formula is displayed based on the first product information c2.
- [180] Referring to FIG. 17, for example, the prosthesis ordering system 10 may display the first dental formula df4 in a first color on the interface before receiving the first product information c2.
- [181] Referring to FIG. 18, for another example, the prosthesis ordering system 10 may receive the first product information c2, update the first dental formula df4 displayed in the first color to a second color, and display the updated first dental formula df4 on the interface. The first color and the second color may be different. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.
- [182] In addition, the prosthesis ordering system 10 may further display the first product information c2 for the first dental formula as an image at a location corresponding to the arrangement of the first dental formula df4. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.
- [183] Referring to FIGS. 19 and 20, the prosthesis ordering system 10 may first receive the first product information c2, and then receive the second dental formula.
- [184] Accordingly, the prosthesis ordering system 10 may display the first dental formula

df5 updated based on the received second dental formula on the interface based on the first product information c2.

- [185] The first dental formula df5 displayed on the interface based on the first product information c2 selected from the product information pdc may be displayed in a color preset to correspond to the first product information c2. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.
- [186] Hereinafter, an interface for generating a splint order will be described with reference to FIGS. 21A and 21B.
- [187] Referring to FIG. 21A, the prosthesis ordering system 10 may include a third interface sp1 that receives information about whether a splint is present between each dental formula displayed on the first interface.
- [188] The splint may be a task of grouping teeth. For example, whether the splint is present may include whether to group and connect the dental products to be used on each of the plurality of teeth. However, this description is merely exemplary, and the embodiments of the present disclosure are not limited thereto.
- [189] An interface sp1 for receiving information about whether the splint is present may be selected and released based on the click and touch of the first user device 20.
- [190] Referring to FIGS. 20 and 21A, the interface sp1 for receiving information about whether the splint is present may be arranged between each dental formula included in the first dental formula df5.
- [191] For example, when displaying the updated first dental formula on the interface, the prosthesis ordering system 10 may display the splint selection sp1 between each tooth included in the first dental formula. In this way, the prosthesis ordering system 10 may request to separate the dental products applied to each tooth included in the first dental formula.

- [192] In this case, when the first user device 20 clicks or touches the interface sp1 that receives the information about whether the splint is present, the prosthesis ordering system 10 may release inter-tooth splints arranged and displayed on both sides of the interface sp1. Accordingly, the interface sp1 may be updated to the interface sp2 where the inter-tooth splint is released.
- [193] Referring to FIG. 21B, for another example, when the prosthesis ordering system 10 displays the updated first dental formula on the interface, the splint selection sp2 between each tooth included in the first dental formula may be displayed in the released status. In this way, the prosthesis ordering system 10 may request to interconnect the applicable dental products of each tooth included in the first dental formula.
- [194] Subsequently, when the first user device 20 clicks and touches the interface sp2 where the inter-tooth splint is released, the prosthesis ordering system 10 may select the inter-tooth splints displayed on both sides of the selected interface sp2. Accordingly, the interface sp2 may be updated to the interface sp1 where the inter-tooth splint is selected. However, this description is merely exemplary, and the embodiments of the present disclosure are not limited thereto.
- [195] Hereinafter, a method in which the dental formula determination unit 13 receives the second region, determines the first dental formula, and updates the interface in conjunction with the interface unit will be described with reference to FIGS. 22 to 27.
- [196] FIGS. 22 to 27 are diagrams for describing the interface unit and the dental formula determination unit of FIG. 1 according to another embodiment of the present disclosure.
- [197] Referring to FIGS. 1 and 22 to 27, the interface unit 11 may provide the first interface (FIG. 22) on which the dental formulas are displayed to the first user device 20. The first user device 20 may select the first region d1 from the first interface (FIG. 22) and provide the selected first region d1 to the dental formula determination unit 13.

Hereinafter, for convenience of description, the time point at which the first user device 20 provides the first region d1 to the dental formula determination unit 13 is defined as the first point in time and the second point in time. The second point in time may be after the first point in time.

[198] The dental formula determination unit 13 may generate the second data of the second dental formula included in the first region d1. The second dental formula may be at least one dental formula included in the first region d1 received at the second point in time. The second data may be data in which each dental formula included in the second dental formula is selected.

[199] Subsequently, the dental formula determination unit 13 may update the first dental formula based on the first data corresponding to the first point in time and the second data corresponding to the second point in time. The first data may include each dental formula selected based on the first region received by the dental formula determination unit 13 at the first point in time. The second data may include each dental formula selected based on the first region received by the dental formula determination unit 13 at the second point in time.

[200] That is, the dental formula determination unit 13 may re-select and update the first dental formula based on the first dental formula selected at the first point in time and the second dental formula selected at the second point in time.

[201] Referring to FIG. 22, for example, the first data may not include at least one dental formula. In this case, the dental formula determination unit 13 may receive the first region d1 at the second point in time and extract the second dental formula corresponding to the first region d1. For example, the second dental formula may be '6', '5', '4', and '3' included in the first region d1. The second data of the second dental formula may include '6', '5', '4', and '3' included in the first region d1.

- [202] Subsequently, the dental formula determination unit 13 may calculate whether the first data and the second data overlap.
- [203] For example, the first data and the second data may not overlap. Therefore, the dental formula determination unit 13 may generate the third data including the first data and the second data. The third data may include '6', '5', '4', and '3'. The dental formula determination unit 13 may select the dental formulas included in the third data as the first dental formula and update the first dental formula. For example, the first dental formula may include '6', '5', '4', and '3'.
- [204] Accordingly, the storage unit 12 may update the first data based on the third data. For example, the first data may be updated with the data included in the third data.
- [205] In addition, the interface unit 11 may update the first interface based on the first dental formula selected by the dental formula determination unit 13. Referring to FIG. 23, for example, the interface unit 11 may display each dental formula by distinguishing the first dental formula from other dental formulas that are not selected.
- [206] When the interface unit 11 displays the first dental formula on the interface, the first product information for the first dental formula may be displayed on the interface (s) in response to the arrangement of the first dental formula. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.
- [207] Subsequently, referring to FIG. 24, another example in which the dental formula determination unit 13 selects the first dental formula will be described. Hereinafter, for convenience of description, the point in time at which the first user device 20 additionally provides the second region d2 to the dental formula determination unit 13 is defined as the third point in time after the second point in time. In addition, an embodiment in which the first dental formula and the first data stored in the storage

unit 12 include '6', '5', '4', and '3' will be described as an example.

- [208]** The dental formula determination unit 13 may receive the second region d2 at the third point in time and extract the second dental formula included in the second region d2. For example, referring to FIG. 24, the second dental formula may be '5' and '4'. The second region d2 may be data generated by dragging the first user device 20 from the first interface.
- [209]** The dental formula determination unit 13 may generate the second data in which each dental formula of the second dental formula is selected. For example, the second data may be '5' and '4'.
- [210]** Subsequently, the dental formula determination unit 13 may calculate whether the first data and the second data overlap. Referring to FIG. 24, the first data corresponding to the first region d1 may include the second data corresponding to the second region d2.
- [211]** In this regard, the dental formula determination unit 13 may generate the third data excluding the second data from the first data. That is, the dental formula determination unit 13 may release the dental formulas corresponding to the second data. For example, referring to FIG. 25, the third data may include '6' and '3' excluding '5' and '4' from '6', '5', '4' and '3'.
- [212]** Subsequently, the dental formula determination unit 13 may update the first dental formula based on the third data. For example, the first dental formula to be updated may include '6' and '3'. In this case, the storage unit 12 may update the first data based on the third data.
- [213]** The interface unit 11 may update the first interface based on the first dental formula selected by the dental formula determination unit 13. Referring to FIG. 25, for example, the interface unit 11 may display each dental formula by distinguishing

between the unselected dental formulas and the first dental formula. However, this description is merely exemplary, and the embodiments of the present disclosure are not limited thereto.

[214] Subsequently, referring to FIG. 26, another example in which the dental formula determination unit 13 selects the first dental formula is described. In the following, for convenience of description, the point in time at which the first user device 20 additionally provides the third region d3 to the dental formula determination unit 13 is defined as the third point in time after the second point in time. In addition, the first dental formula and the first data stored in the storage unit 12 are described as an example of an embodiment including '6' and '3'.

[215] The dental formula determination unit 13 may receive the third region d3 at the third point in time and extract the second dental formula included in the third region d3. For example, referring to FIG. 26, the second dental formula may include '5', '4', and '3'.

[216] The dental formula determination unit 13 may generate the second data in which each dental formula of the second dental formula is selected. For example, the second data may be '5', '4', and '3'.

[217] Subsequently, the dental formula determination unit 13 may calculate whether the first data and the second data overlap. Referring to FIG. 26, the second data and the first data may partially overlap.

[218] In this regard, the dental formula determination unit 13 may generate the third data including the first data and the second data. Referring to FIG. 27, for example, the third data may include '6', '5', '4', and '3'.

[219] Subsequently, the dental formula determination unit 13 may select the first dental formula based on the third data. For example, the first dental formula may include

'6', '5', '4', and '3'. The storage unit 12 may update the first data based on the third data.

[220] The interface unit 11 may generate an interface for displaying the first dental formula selected by the dental formula determination unit 13 and the dental formulas that are not selected. However, this description is merely exemplary, and the embodiments of the present disclosure are not limited thereto.

[221] Hereinafter, a method for generating multiple pieces of order information will be described with reference to FIGS. 28 to 31.

[222] FIGS. 28 to 31 are diagrams for describing a method for generating multiple pieces of order information of a prosthesis ordering system according to another embodiment of the present disclosure.

[223] The prosthesis ordering system 10 may generate order information corresponding to different first dental formulas, respectively.

[224] For example, referring to FIGS. 1 and 28, the prosthesis ordering system 10 may generate first order information o1 corresponding to the first dental formula df1 of the first patient.

[225] The generated first order information o1 may be displayed on the interface. For example, the first order information o1 may include first product information do1, a first dental formula interface oi1, a modification interface m, and an additional order request interface ao.

[226] The first product information do1 may be product information corresponding to the first order information. The first dental formula interface oi1 may be an interface for displaying a first dental formula df6 corresponding to the first order information o1. The modification interface m is an interface for requesting an interface that may modify the first order information o1, and may request an interface that modifies the

first dental formula df6 or modifies the first product information do1 corresponding to the first dental formula df6.

[227] The additional order request interface ao may be an interface for requesting to generate the multiple pieces of order information of the first patient. For example, the prosthesis ordering system 10 may generate the multiple pieces of order information of the first patient based on the dental formulas or the product information. For this purpose, the prosthesis ordering system 10 may generate an interface for grouping each of the pieces of order information by patient. However, this description is merely exemplary, and the embodiments of the present disclosure are not limited thereto.

[228] For the convenience of description, an example in which the prosthesis ordering system 10 generates the first order information o1 and the second order information o2 for the first patient will be described.

[229] The first order information o1 is order information for the first dental formula df6 of the first patient.

[230] The prosthesis ordering system 10 generates the first order information o1 of the first patient and provides an interface for ordering the second order information o2 through the additional order request interface ao to the first user device 20.

[231] In this case, the interface provided to the first user device 20 may deactivate each dental formula df6 of the first order information o1 that has been written in advance. For example, referring to FIG. 29, the interface unit 11 may deactivate a part of the interface corresponding to the first dental formula df6 of the first order information o1 in the first interface. In this way, the first user device 20 may be provided with an interface that may request an order corresponding to the remaining dental formulas except for the first dental formula of the already written first order information.

[232] In addition, the first user device 20 may be provided with the interface corresponding

to the first dental formula df6 with some of the interfaces deactivated, so a second dental formula df7 may be selected. The prosthesis ordering system 10 may generate the second order information o2 for the second dental formula df7.

[233] Subsequently, the prosthesis ordering system 10 may display the multiple pieces of order information generated in conjunction with the first user device 20 on the interface. Referring to FIG. 30, for example, the prosthesis ordering system 10 may display the first order information o1 and the second order information o2 on the interface.

[234] Each interface that displays each of the pieces of order information may display the product information and the dental formulas of the corresponding order information. Referring to FIG. 30, for example, the prosthesis ordering system 10 may display the first order information o1 and the second order information o2 by listing the first order information o1 and the second order information o2 in parallel.

[235] The prosthesis ordering system 10 may generate an interface m for modifying each of the pieces of order information and an interface d for deleting each of the pieces of order information when each of the pieces of order information is displayed on the interface.

[236] In addition, the prosthesis ordering system 10 may generate an interface for managing the generated order information.

[237] Referring to FIGS. 1 and 31, the prosthesis ordering system 10 may classify at least one generated order information based on a predetermined criterion and generate an interface for each classification.

[238] The predetermined criteria may include the time at which the order information is generated, the time at which the order information is provided to an external system, the work progress status corresponding to the order information, and the order completion.

- [239] For example, the prosthesis ordering system 10 may generate an interface ol for grouping and displaying accumulated order information based on each chart number and each patient identification value.
- [240] The interface ol may include order information od, a progress status ps of the order information, an interface p1 for displaying at least one first dental formula to which the order information is applied, a chart number, patient identification data, treatment data, and an order date.
- [241] In this case, the interface p1 where dental formulas are displayed may display dental formulas corresponding to each of the pieces of grouped order information. Each dental formula corresponding to each of the pieces of order information may be displayed differently. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.
- [242] In addition, the prosthesis ordering system 10 may generate an interface ost for displaying order information generated on the same day based on a time server.
- [243] For another example, the prosthesis ordering system 10 may extract order information, which is an expected arrival stage, based on the order progress stage of each of the pieces of order information. The prosthesis ordering system 10 may display the extracted order information on an interface ota and provide the order information, which is an expected arrival stage, to the first user device 20.
- [244] In this case, the first user device 20 may receive the dental product corresponding to the order information and provide the generated order completion data to the prosthesis ordering system 10.
- [245] Accordingly, the prosthesis ordering system 10 may extract order information based on the order completion data and display the extracted order information on the interface co.

- [246] In addition, the prosthesis ordering system 10 may display the generated order information on an interface wo and provide the generated order information to the first user device 20. The first user device 20 may request to provide the selected order information to an external system using the provided interface wo.
- [247] In this case, the prosthesis ordering system 10 may remove the order information provided to the external system from the interface wo and add the order information to another interface ost to display the order information.
- [248] Hereinafter, referring to FIGS. 28, 32A, and 32B, the first dental formula selection and interface generation of the prosthesis ordering system according to another embodiment of the present disclosure will be described.
- [249] Referring to FIG. 28, the prosthesis ordering system 10 may first generate the first order information o1 and provide an interface to the first user device 20 based on the additional order request interface ao.
- [250] The interface provided to the first user device 20 may deactivate a part oi1 of the first interface corresponding to the first dental formula of the first order information o1 generated in advance.
- [251] Subsequently, the prosthesis ordering system 10 may receive the fourth region d4 of the second order information o2 to generate the first data and select the first dental formula. For convenience of description, an example is described in which the first data are '2', '3', '4' and '5' included in the fourth region d4, and the first dental formula is '2', '3', '4' and '5'.
- [252] Subsequently, the prosthesis ordering system 10 may receive input data p that extracts one of the first dental formulas. The input data p may be data selected by the first user device 20 by clicking one of the first dental formulas.
- [253] The prosthesis ordering system 10 may additionally generate order information of

dental formulas corresponding to the input data p. The additionally generated order information may include pontic data of a tooth corresponding to the input data p.

[254] The pontic data may be data requesting the processing of a dental product of a tooth corresponding to the input data p as a tooth without its abutment. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.

[255] The prosthesis ordering system 10 may display the dental formulas corresponding to the pontic data on the interface using at least one of characters, symbols, and pictures. For example, referring to FIG. 32B, the pontic data p may be displayed as the character 'X'. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.

[256] In addition, referring to FIG. 32A, the prosthesis ordering system 10 may include an interface sp1 for receiving information about whether a splint is present between each dental formula displayed on the first interface.

[257] The splint may be a task of grouping teeth. For example, whether the splint is present may include whether to group and connect dental products to be used on each of the plurality of teeth. However, this description is merely exemplary, and the embodiments of the present disclosure are not limited thereto.

[258] The interface sp1 for receiving information about whether the splint is present may be selected and released based on the click of the first user device 20. For example, referring to FIG. 32A, the interface sp1 for receiving information about whether the splint is present is located between '2' dental formulas and '3' dental formulas and may be selected by the first user device 20. Here, the interface sp1 selected by the first user device 20 may indicate that the '2' dental formulas and the '3' dental formulas are separated, respectively.

- [259] In addition, referring to FIGS. 32A and 32B, the interface sp2 may be an interface that is released when the first user device 20 selects the interface sp1. The interface sp2 means that the '2' dental formulas and the '3' dental formulas corresponding to the pontic data p included in the fourth region are grouped. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.
- [260] Hereinafter, a method for generating order information for implant treatment will be described with reference to FIGS. 33 to 36.
- [261] FIGS. 33 to 36 are diagrams for describing implant order information of a prosthesis ordering system according to another embodiment of the present disclosure.
- [262] Referring to FIG. 33, the prosthesis ordering system 10 may provide an implant interface for generating implant order information to the first user device 20.
- [263] The implant interface may include the first interface dfi, implant product information ipt, and implant additional information ips.
- [264] The first interface dfi may be an interface for displaying an identification value for identifying a tooth based on the location of each tooth.
- [265] The implant product information ipt may include material types related to implants among the material types included in the product information pdc.
- [266] The implant additional information ips may include additional configuration data related to the implant product information ipt. For example, the implant additional information ips may be data provided to enable input of detailed configurations based on the implant structure.
- [267] Specifically, the implant additional information ips may include each setting data of the implant product information ipt corresponding to the prosthesis, the abutment, and an artificial tooth root.
- [268] The implant product information ipt and the implant additional information ips may be

data received and stored through the first user device 20 or an external system. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.

[269] In addition, the prosthesis ordering system 10 may generate an interface for placing an order for implant treatment.

[270] Referring to FIG. 33, the prosthesis ordering system 10 may provide the first user device 20 with the interface for placing an order for implant treatment, and may receive order product data.

[271] The order product data may be data selected by the first user device 20 from the product information. In other words, the order product data may be data included in the order information. Hereinafter, for convenience of description, the order product data is described as an example of the first implant product information ipt including an implant crown, zirconia, a base, and a highness. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.

[272] Subsequently, referring to FIG. 34, the prosthesis ordering system 10 may generate a setting interface based on the first implant product information ipt. The setting interface may include a first setting interface i1 and a second setting interface i2.

[273] The first setting interface i1 and the second setting interface i2 may be interfaces that may set each element of the implant structure based on the implant structure corresponding to the first implant product information ipt.

[274] For example, the first setting interface i1 may include a setting list for the base included in the first implant product information ipt. Hereinafter, for convenience of description, an example of a highness included in the first implant product information ipt is described as an example. In addition, the first data and the first dental formula describe the first setting interface based on an embodiment including '2', '3', '4' and '5'.

- [275] Referring to FIG. 34, the prosthesis ordering system 10 may display the implant additional information ips corresponding to the highness included in first implant product information ipt on the first setting interface i1. For example, the implant additional information ips corresponding to the highness may include highness-5.5 and highness-4.5.
- [276] The prosthesis ordering system 10 may generate an interface for displaying the location of the dental formulas for each element selected by the first user device 20 from the implant additional information ips.
- [277] For example, the prosthesis ordering system 10 may receive first implant additional information ips1 from the first user device 20. In this case, the prosthesis ordering system 10 may generate an interface ipdf1 through which the first user device 20 may select the location of the dental formulas to which the first implant additional information ips1 is applied.
- [278] In this case, the first user device 20 may select dental formulas ips1c to which the first implant additional information ips1 is applied by using at least one of drag and selection in the received interface ipdf1.
- [279] The prosthesis ordering system 10 may deactivate remaining dental formulas ips1d except for the selected dental formulas ips1c in the interface ipdf1.
- [280] Subsequently, the prosthesis ordering system 10 may receive second implant additional information ips2 from the first user device 20. The prosthesis ordering system 10 may generate an interface ipdf2 that may select the location of the dental formulas to which the second implant additional information ips2 is to be applied. For example, the prosthesis ordering system may deactivate the interface corresponding to the previously selected dental formulas ips1c. The deactivated dental formulas ips2d may be updated according to the modified implant additional

information. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.

[281] The prosthesis ordering system 10 may provide an interface cc that allows a color of a dental product to be finely classified and set.

[282] Referring to FIG. 35, for example, the prosthesis ordering system 10 may generate an interface that may set a color of a cut color cc1, an intermediate shade cc2, and a cervix dentis area cc3, respectively.

[283] In addition, the prosthesis ordering system 10 may generate an interface that may set one color for each of the pieces of order information. However, this description is merely exemplary, and the embodiment of the present disclosure is not limited thereto.

[284] Hereinafter, a method for the prosthesis ordering system 10 to update the interface based on data received using the implant interface will be described with reference to FIG. 36.

[285] Referring to FIGS. 1 and 36, the prosthesis ordering system 10 may generate third order information o3 for the implant order information.

[286] The prosthesis ordering system 10 may display the generated third order information o3 on the interface. For example, referring to FIGS. 33 and 36, the third order information o3 may include data do3 received based on implant additional information ips.

[287] The third order information o3 may include data oi3a and oi3b received using the first interface dfi. In this case, the received data oi3a and oi3b may be first dental formulas included in a sixth area d6. The sixth region d6 may be a region received corresponding to the third order information o3.

[288] In addition, the prosthesis ordering system 10 may generate an interface ipsa for displaying the implant additional information ips for each dental formula of the sixth

area d6 on the interface that displays the dental formulas. For example, referring to FIGS. 34 and 36, the prosthesis ordering system 10 may generate an interface i1i for displaying input data based on the first setting interface i1 in conjunction with the display of dental formulas.

[289] For another example, the prosthesis ordering system 10 may generate an interface i2i for displaying input data based on the second setting interface i2 in conjunction with the display of the dental formulas.

[290] In addition, the prosthesis ordering system 10 may generate the multiple pieces of order information for each patient. For example, the prosthesis ordering system 10 may generate the first order information and the second order information of the first patient.

[291] In this case, the prosthesis ordering system 10 may display the first dental formula corresponding to the first order information and the first dental formula corresponding to the second order information differently on the first interface, respectively. In this way, the interface for displaying the multiple pieces of order information may ensure readability. However, this description is merely exemplary, and the embodiments of the present disclosure are not limited thereto.

[292] The teachings of the present embodiment is illustratively described hereinabove. It will be appreciated by those skilled in the art to which the present embodiment pertains that various modifications and alterations may be made without departing from the essential characteristics of the present embodiment. Accordingly, the present embodiments are not to limit the teachings of the present embodiment, but are to describe the teachings of the present disclosure. The technical idea of the present embodiment is not limited to these embodiments. The scope of the present disclosure should be interpreted by the following claims, and it should be interpreted that all the teachings equivalent to the following claims fall within the scope of the present

disclosure.

【CLAIMS】

【Claim 1】

A prosthesis ordering system, comprising:

an interface unit which provides a first interface that displays dental formulas, and a second interface that includes product information for a dental order for a first dental formula selected from the dental formulas;

a storage unit which stores first data of the first dental formula selected in the first interface, and receives product information which includes material types, ordered for dental treatment corresponding to the first dental formula, and a selection list for each of the material types;

a dental formula determination unit which receives a first region selected in the first interface, generates second data of a second dental formula included in the first region, and selects the first dental formula from the dental formulas based on the first data and the second data; and

an order information generation unit which generates order information for the first dental formula by using the first interface and the second interface.

【Claim 2】

The prosthesis ordering system of claim 1, wherein, when the first data and the second data do not overlap, the dental formula determination unit generates third data including the first data and the second data, and selects the first dental formula corresponding to the third data.

【Claim 3】

The prosthesis ordering system of claim 1, wherein, when the first data includes the second data, the dental formula determination unit generates third data excluding the second data from the first data, and selects the first dental formula corresponding to the third data.

【Claim 4】

The prosthesis ordering system of claim 1, wherein, when the first data and the second data partially overlap, the dental formula determination unit generates third data including the first data and the second data, and selects the first dental formula corresponding to the third data.

【Claim 5】

The prosthesis ordering system of claim 1, wherein the order information generation unit deactivates the display of the first dental formula included in the first interface.

【Claim 6】

The prosthesis ordering system of claim 1, wherein the first interface receives input data for extracting any one of the first dental formulas, and

the order information generation unit generates first order information of a third dental formula corresponding to the input data, and the first order information includes pontic data of a processed tooth corresponding to the third dental formula.

【Claim 7】

The prosthesis ordering system of claim 1, wherein the interface unit further includes a third interface for receiving information about whether a splint is present between each of the dental formulas displayed on the first interface, and

the order information generation unit generates a splint order based on input data received based on the third interface.

【Claim 8】

The prosthesis ordering system of claim 1, wherein the dental formula determination unit selects, from the first dental formula, a fourth dental formula corresponding to first order product data selected from the product information.

【Claim 9】

The prosthesis ordering system of claim 8, wherein the dental formula determination unit selects, from the first dental formula, a fifth dental formula corresponding to second order product data selected from the product information, and

the fifth dental formula does not overlap with the fourth dental formula.

【Claim 10】

The prosthesis ordering system of claim 9, wherein the interface unit further includes a fourth interface which corresponds to the second order product data and displays the first dental formula, and

the fourth interface deactivates the fourth dental formula.

【Claim 11】

The prosthesis ordering system of claim 1, wherein the prosthesis ordering system includes:

an interface unit which provides a first interface for displaying dental formulas, and a second interface including product information for a dental order for a first dental formula selected from the dental formulas;

a storage unit which stores first data, indicating whether a first dental formula is selected at a first point in time, in the first interface, and receives the product information including material types ordered for dental treatment corresponding to the first dental formula and a selection list of each of the material types;

a dental formula determination unit which receives a second dental formula selected at a second point in time after a first point in time in the first interface, generates second data indicating whether the second dental formula is selected, and updates the first dental formula in the dental formulas based on the first data and the second data; and

an order information generation unit which generates order information for the first dental formula by using the first interface and the second interface.

【Claim 12】

The prosthesis ordering system of claim 11, wherein, when the first data and the second data do not overlap, the dental formula determination unit generates third data including the first data and the second data, and updates the first dental formula based on the third data.

【Claim 13】

The prosthesis ordering system of claim 11, wherein, when the first data and the second data overlap, and the second data and pontic data of a processed tooth stored in the storage unit do not overlap, the dental formula determination unit generates the pontic data corresponding to the second dental formula, generates third data based on the first data and the pontic data, and updates the first dental formula based on the third data.

【Claim 14】

The prosthesis ordering system of claim 13, wherein, when the second data and the pontic data overlap, the dental formula determination unit generates third data excluding the second data from the first data, and updates the first dental formula based on the third data.

【Claim 15】

The prosthesis ordering system of claim 11, wherein the order information generation unit deactivates the display of the first dental formula included in the first interface based on the order information.

【Claim 16】

The prosthesis ordering system of claim 11, wherein the interface unit further includes a third interface for receiving information about whether a splint is present between each of the dental formulas displayed on the first interface, and

the order information generation unit generates a splint order included in the order information based on input data received based on the third interface.

【Claim 17】

The prosthesis ordering system of claim 11, wherein the dental formula determination unit selects, from the first dental formula, a fourth dental formula corresponding to first order product data selected from the product information, and

the interface unit further includes a fourth interface for displaying the fourth dental formula corresponding to the first order product data.

【Claim 18】

The prosthesis ordering system of claim 17, wherein the dental formula determination unit selects, from the first dental formula, a fifth dental formula corresponding to second order product data selected from the product information,

the interface unit further includes a fifth interface that displays the fifth dental formula corresponding to the second order product data, and

the fifth dental formula does not overlap with the fourth dental formula.

【Claim 19】

The prosthesis ordering system of claim 18, wherein a part of the fourth interface corresponding to the fourth dental formula is deactivated.

【Claim 20】

The prosthesis ordering system of claim 11, wherein the interface unit displays each of the first dental formulas corresponding to each of the pieces of order information differently on the first interface.