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Netnography of female use of the synthetic growth hormone CJC-1295: Pulses and Potions.

Abstract

Background

Communal online folk pharmacology fuels the drive for short cuts in attaining muscle enhancement, fat loss, and youthful skin.

Objectives

The study used '*netnography*' to explore female use of CJC-1295, a synthetic growth hormone analogue from the perspectives contained in internet forum activity.

Methods

A systematic internet search was conducted using variation of the term '*CJC-1295*; and combined with '*forum*'. 96 hits related to bodybuilding websites where CJC-1295 was mentioned. Following application of exclusion criteria to confine to female use and evidence of forum activity, 9 sites remained. These were searched internally for reference to CJC-1295. 23 discussion threads relating to female use of CJC-1295 formed the end data set, and analysed using the Empirical Phenomenological Psychological method.

Results

Forum users appeared well versed and experienced in the poly use of performance and image drug supplementation. Choice to use CJC-1295 centred on weight loss, muscle enhancement, youthful skin, improved sleep and injury healing. Concerns were described relating to female consequences of use given gender variations in growth hormone pulses affecting estimation of dosage, cycling and long term consequences.

Conclusions

Public health interventions should consider female self-medicating use of synthetic growth hormone within a repertoire of product supplementation, and related adverse health consequences.

Key words

CJC-1295; Growth hormone; netnography

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Introduction

Widespread availability and growing prevalence in the use of image and performance enhancement drugs within mainstream fitness groups has contributed to an emergent public health issue (Christiansen, 2009; Evans-Brown et al., 2012; Ip et al., 2012; Pope et al., 2014). Blurring between self-medication, medical treatment and augmentation of performance and appearance is increasingly evident in contemporary society (Dodge & Hoaglund, 2011). Muscle enhancing supplements are most commonly used, with users commonly engaging in poly pharmacy by ingesting drugs designed to stimulate testosterone or growth hormone secretion (i.e. clomiphene, gamma hydroxybutyrate, levodopa) with other hormones (i.e. thyroid hormones, human chorionic gonadotropin, insulin-like growth factor-1), ergogenic drugs (amphetamine, caffeine, pseudoephedrine, ephedrine, clenbuterol), drugs for weight or fluid loss (diuretics, laxatives), other agents (erythropoietin, tamoxifen, danazol, yohimbine, 2,4-dinitrophenol) and illicit drugs of abuse (cannabis, opiates, cocaine) (Gruber & Pope, 2000; Kanayama et al., 2001; Kanayama et al., 2010; Kanayama & Pope, 2012; Ip et al., 2012). Rising use of enhancement supplements sold over the counter in commercial health club users is observed (Muller et al., 2009). Consequences of use centre on harms associated with use of untested and unregulated substances obtained on the illicit market, medical and psychiatric adverse effects, dependence syndrome and fatalities (Thiblin et al., 2009; Kanayama & Pope, 2012; Ip et al., 2012; Pope et al., 2014).

Focus and preoccupation on body image is increasingly common for both genders in recent decades (Cash & Pruzinsky, 2002). Use of enhancement drug supplements is reportedly widespread amongst athletes at all ages and competitive levels (Calfee & Fadale, 2006).

Some studies suggest men are more willing to use enhancement drugs than women (Møldrup & Hansen 2006; Breivik et al., 2009). Prevalence of muscle enhancing supplement use is mostly male, but more recently among female athletes (Thiblin et al., 2009) and elite female bodybuilders (Gruber & Pope, 2000; Evans-Brown & McVeigh 2009). Drug supplementation differs per gender, with females more likely to report use of ephedrine, human growth hormone, human chorionic gonadotropin and clenbuterol as opposed to muscle enhancing supplements (Brill & Keane, 1994; Jespersen, 2012). Recent commentaries have underscored the need to recognise that use of enhancement drug supplements can occur in other segments of the fitness population, and more recently among women who exercise (Jespersen, 2012). Of interest for this study is that changing social perspectives of the ideal female physique are

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evident in recent times. Popularity of the female body ideal from slim (Brumberg, 1998) has shifted toward that of a lean, athletic, fit and strong physique with masculine characteristics (Grogan, 2006). This shift has potentially contributed to the female adoption of specific male characteristic behaviours relating to drug supplementation and fitness training (Field et al., 2005; Muller et al., 2009). Concerns are evident with regard to the lack of female reporting and hidden nature of female enhancement drug use (Kanayama et al., 2010).

Growth Hormone and CJC-1295

Human growth hormone is a naturally occurring peptide hormone which maintains body composition, and improves physical performance, cardiovascular health and wellbeing in humans (Graham et al., 2008a; Graham et al., 2008b; Olshansky & Perls 2008; Graham et al., 2009; Erotokritou-Mulligan et al., 2011). It is one of the oldest and popular anti-aging treatments in animal models (Rudman et al., 1990; Liang et al., 2003; Al-Regaiey et al., 2005; Sun et al., 2005) despite concerns for adverse side effects (Liu et al., 2007; Ayuk & Sheppard, 2008; Brennan et al., 2010) and reviews that supplementation does not significantly increase muscle strength or aerobic capacity in either health subjects (Liu et al., 2008) or non-human growth hormone deficient subjects (Gibney et al., 2007; Ehrnborg & Rosen, 2008; Graham et al., 2009). Clinical studies observe its limited properties to promote muscle growth in healthy active subjects with outcomes complicated by issues in targeting appropriate dosage and cardiovascular and metabolic consequences (Crist et al., 1988; Deyssig et al., 1993; Wallace et al., 1999; Berggren et al., 2005; Ehrnborg et al., 2005). However, in combination with anabolic steroids or on cessation of anabolic steroid use, it may incur these effects (Gibney et al., 2007; Ehrnborg & Rosen, 2008; Graham et al., 2009).

Human growth hormone was once abused solely by elite athletes (Salomon et al., 1989). Illicit use is rising in athletes striving to improve physical performance with demand fuelled by internet availability of new, cheap and potent synthetic growth hormone releasing hormone analogues (Brennan et al., 2010; Cai et al., 2014). This rise in synthetic peptide drug manufacture, often marketed without prior clinical trials (Henninge et al., 2010) occurs in correspondence with development of new detection methods in sport (Saugy et al., 2006; Sackmann-Sala et al., 2009; Bidlingmaier & Strasburger, 2010; Thomas et al., 2012). Illicit use has also displaced into repertoires of poly pharmaceutical and illicit drug use in

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bodybuilding and weight lifting groups (Rickert et al., 1992; Gruber & Pope, 2000; Kanayama et al., 2003; Baker et al., 2006; Skarberg et al., 2009; Brennan et al., 2010).

Of interest for this study is the popular and potent long-acting synthetic analogue is CJC-1295. It is a tetra substituted 30-amino acid peptide hormone originally manufactured by Conju Chem, a Canadian biotechnology company. Similar to other peptides sold over the internet (Van Hout, 2014), CJC-1295 is a sterile, non-pyrogenic, white lyophilized powder for administration via subcutaneous or intramuscular injection at doses of around 100mcg per injection, and after reconstitution with sterile water. Websites purport that CJC-1295 contributes to an enhanced immune system, improved sleep, boosting of protein synthesis, with mild side effects including flushing, water retention, and in some cases insomnia. In contrast to natural growth hormone releasing hormone which has a half-life of approximately 7 minutes, CJC-1295 has a longer half-life of 6-8 days (Jetté et al., 2005; Alba et al., 2006; Teichman et al., 2006; Chapter et al., 2010; Baumann, 2012). CJC-1295 causes sustained, pulsatile human growth hormone secretion and increased insulin-like growth levels for several days after one single dose (Chapter et al., 2010). The product is marketed with and without drug affinity complex (DAC) technology, which optimises this longer half-life and resultant therapeutic window (Teichman et al., 2006). CJC-1295's long half-life is appealing to users by facilitating a 7 day dosage schedule (Ionescu & Frohman, 2006; Teichman et al., 2006; Chapter et al., 2010).

The natural history effects of CJC-1295 in human subjects are for the most part largely unknown, with study effects centring on secretion of growth hormone, frequency of adverse consequences and effects of cumulative dosage (Jette et al., 2005; Ionescu & Frohman, 2006; Teichman et al., 2006; Alba et al., 2006; Sackmann-Sala et al., 2009; Evans-Brown et al., 2012). It has potential for abuse risk for performance enhancement purposes (Baumann, 2012). Decisions to use centre on its anti-aging properties, promotion of lipolysis with fat loss in the stomach area, muscle growth, increased strength, improved skin tone with reduced wrinkling, improved slow wave sleep, energising effect, stronger bones, promotion of regrowth of internal atrophied organs and connective tissues, and improvements in immune systems (Saugy, et al., 2006; Evans-Brown et al., 2012). Health risks of CJC-1295 include cardiomyopathy, menstrual irregularities, osteoporosis, impotence, potential blood borne virus transmission in shared injection practices, and premature mortality from cardiovascular

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diseases (Saugy, et al., 2006). It is readily available via sub-cultural and internet sourcing routes (Thomas et al., 2010) and is widely purported as ancillary supplement within bodybuilding communities (Henninge et al., 2010).

Rationale

Information on enhancement drug use motives, sourcing, practices and protocols for use are available via sub-cultural guides (Gallaway, 1997; Roberts & Clapp, 2006; Llewellyn, 2009), and from internet sites promoting forum exchange of knowledge, influence around products and sourcing routes (Kanayama et al., 2010). Given the potency of the internet in hosting forum discussion, promoting indigenous harm reduction, social reinforcement of consumption and product knowledge exchange between illicit enhancement drug users (Smith & Stewart, 2012; Van Hout, 2014), the study used '*netnography*' (Kozinets, 2002) to explore female use of CJC-1295 from the perspectives disclosed in publically available internet forum activity. This novel internet methodology adapts ethnographic research techniques to the study of communities emerging through cyber mediated communication. The underpinning purpose of the study was to yield unique insight into female online folk pharmacology relating to CJC-1295 within asynchronous interactions in diverse forum threads and discussions between unconnected users (Hsiung, 2000). The study aimed to provide greater understanding of the essence of CJC-1295 experiences within the reflective life world of female users and in the absence of preconceived hypotheses or generalizations (Wertz, 2005).

Methods

Dedicated online research methodologies are increasingly used to uncover emergent drug trend phenomena by virtue of systematic gathering of textual data based on passive monitoring and textual qualitative analysis of publically available user postings in drug forum discussions (Kozinets, 2002; Miller & Sønderlund, 2010; Van Hout, 2014). The aim of the study was to explore and describe CJC-1295 female user decision making processes, practices and side effect phenomena as per their subjective interpretations of their experiences and cognisant of their realities (Patton, 2002). In accordance with designated protocols for online research, a series of public body building forums were scrutinised with researchers maintaining observational status. Sampling of forum activity by female users of

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CJC-1295 was grounded in Kozinet's criteria relating to scale, interactivity and heterogeneity.

A systematic internet search was performed on Google Insights for Search, Google and Yahoo by using specific key words; '*CJC-1295*', '*CJC 1295*' and in combination with the word '*forum*'. The searches generated 96 hits relating to sites where the term CJC-1295 was mentioned. The first 50 hits of the searches were examined more closely, with sites excluded if not defined as a bodybuilding website¹, and if not hosting forum discussions. A total of 38 sites hosting forum activity around CJC-1295 use remained. Of these 38 sites, a further 29 were excluded when no dedicated female section was located on the website. Subsequently the remaining 9 sites were searched systematically for reference to CJC-1295 by utilizing the site's internal search engine, and using the term '*CJC-1295*'. This search ran until no more data could be located on the female use of CJC-1295, and generated 37 identified threads relating to female use and interest in CJC-1295. Following exclusion of duplicate threads and male discussions, 23 discussion threads remained. 59 distinct user pseudonyms were recorded in the data set. See Table 1.

Insert Table 1 here.

The textual data was transferred to a Word document with the final data set of 14621 words stored in an online, password-protected computer. Even though the information is widely available on public website, the participants' anonymity was protected by removal of URLs and personal identifiers (Wilkinson & Thelwall, 2011). The dataset was analysed in an open, unbiased and careful manner by using the Empirical Phenomenological Psychological (EPP) five step method (Karlsson, 1995) which is underpinned by Husserl's (1970) phenomenology theory. This approach has strong similarities with Giorgi's (2000) principles and facilitates interpretation of meaning of lived phenomena. The EPP method was employed to carefully collect qualitative information in an open and unbiased manner, cognizant of optimising validity in describing subjective female experiences of the CJC-1296 phenomenon, as so called life world experiences. The researchers strove to ensure that participant reporting of

¹ A site with forum dedicated to bodybuilding, weight loss, exercise, and overall healthy living.

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the CJC-1295 experience was undistorted by any pre understanding of the researchers in the initial steps of analysis.

The following key steps were followed and adapted from EPP protocols employed in previous netnographic work on illicit substances (Van Hout, 2014):

Step 1. Data was read three times in order to familiarize with the topic of female use of CJC-1295, and create an unbiased overview without any specific hypothesis. Theoretical reflection was withheld.

Step 2. Data was divided into smaller meaning units (MU), without regard to recorded syntax, and each time a new meaning, focus or topic on female use of CJC-1295 occurred in the text. MU consisted of whole paragraphs to single words, with the text marked each time a shift in meaning took place.

Step 3. MU were restated by researchers in order to present the significant and implicit meaning of the CJC-1295 phenomena in objectivised terms, and with interpretative validity ensured by collaboration in respecting perspectives and user experience.

Step 4. Restated MU were then categorised by repeated team consultation with the original data set, by checking the category was maintained, and consideration of specific characteristics and similarities in the female CJC-1295 phenomena.

Step 5. Categories were subsequently situated within more general themes, in order to raise the level of abstraction through identifiable patterns within related categories. Five themes with 47 categories were generated. See Table 2. Steps 3 to 5 were influenced by the reflections of Giorgi (2000).

Insert Table 2 here

Results

Five themes emerged which are presented below with illustrative quotations.

Female interest in CJC-1295 and informed decision-making

Female forum activity reported on choices to use CJC-1295 as centring on its properties to stimulate fat loss, enhance muscle tone, improve sleep, joint mobility, aid in healing and improve skin quality and texture.

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'I am totally new at this, never tried anything before. I am trying to lose weight and nothing seems to work, I need something to keep me a boost.'

The majority of interested users posted queries on CJC-1295 on foot of media articles and both online and real peer feedback.

'Best friend was thinking about using it, and I was reading an article about a girl who took it. It says she lost a good amount of weight and has kept it off. It just did not say any side effects, so I wanted to find out some more info.'

Those forum users against the use of CJC-1295 advocated adherence to protein diets, use of stimulant fat-burner supplements, and in a minority of postings the use of clenbuterol. Forum activity advocated user researching prior to deciding to purchase. Caution was advised on using CJC-1295.

'I can't believe people want to supplement with this without adequate research.' Female users observed concern for influences and pressures to use CJC-1295 by male trainers, boyfriends and husbands. Forum activity underscored the need for informed decision-making based on personal research.

'Most male trainers, boyfriends and husbands are sorting out your cycles. If you are getting your info from men, it's up to YOU to STILL do the research and know the whats/whens/wheres of what you're putting in your body.'

Forum activity centred on user questioning around which CJC-1295 products to purchase, in terms of whether to purchase CJC-1295 with Drug Affinity Complex (DAC) or without.

Views varied on cost effectiveness and weekly dosing schedules. With DAC was reportedly more expensive.

'I don't know which one. With DAC or without it. If with DAC, I just need to inject it once a week, it will be cheaper.'

Some comments centred on CJC-1295 safety improved by DAC.

'From what I have researched on DAC it makes compounds safer and more effective. Drug affinity complex is basically supposed to make a compound more efficient with longer lasting effects.'

Consequences and risks of female use of CJC-1295

Most forum posts appeared concerned with the consequences of use in females as opposed to males. This centred on CJC-1295 effects on muscle enhancement and contraception.

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'Does anyone know the effects of CJC 1295 on women? Like I said I am only trying to lose weight and tone up, not bulk up.'

Activity awareness of gender specific differences in growth hormone pulses between males and females also formed basis of discussions.

'Women have more pulses throughout the day and higher troughs. Men have a huge night-time pulse that results in most of their GH release for the day.'

Users speculated on the female risks of synthetic growth hormone use. Choices to use CJC-1295 and other products centred on preferential outcomes between products on the market.

Some awareness was evident in forum discussion on the risks on female use causing damage to the pituitary gland due to the over stimulation and secretion of human growth hormone.

'CJC 1295 makes the body produce more growth hormone without shutting natural production down. CJC increases growth hormone production tenfold which makes it very risky for women.'

CJC-1295 poly pharming in female PIED repertoires

Forum users for the most part appeared well versed and experienced in the use of a host of synthetic enhancement drug supplements.

'At 27 I can't say I've seen much age related wear and tear yet. I'm running it primarily for the synergistic effects with anabolic, and injury repair and prevention.'

GHRP-6 (a specific product) was described as particularly useful stack along with CJC-1295.

'CJC-1295 brings about persistent and chronically elevated levels of growth hormone while GHRP-6 if injected a couple of times a day amplifies the very important GH pulses. The two compounds greatly complement each other.'

GHRP-6 was also advocated by some users for its effect on boosting appetite and reduction of inflammation and aiding soft tissue healing. Some users considered using CJC-1295 with

GHRP-2 (another available product), due to negative views on the GHRP6 associated intense appetite.

'Be careful with the GHRP! It will make you extremely hungry! I am not kidding, you will blow your diet in 30 min!'

Arginine an essential amino acid was viewed to improve fat loss, and improve the use of CJC-1295 in increasing the potency of the growth hormone spike. Other comments centred on using glutamine to increase GH in the body, and stacking with IGF-1 LR3, a synthetic

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peptide product purported to increase muscle growth and fat burning simultaneously and slower in delivery and release.

CJC-1295 female outcomes

When using CJC-1295, salient outcomes centred on the improved sense of well-being and facilitated continued use.

'My mood is 1000% improved, in particular, my outlook and attitude have changed for the positive and my energy levels are better. My skin definitely has cleared up and my husband thinks I'm looking slimmer even though there really hasn't been much exercise.'

One CJC-1295 user reported using alongside natural progesterone and topical testosterone in order to stave off menopause.

'Even if it was doing nothing physically I'd take it for the improved mental outlook alone.'

Those using when not training and rehabilitating from injury reported satisfactory experiences.

'The primary reason for my beginning is anti-aging and injury (rehab). My joints generally feel a bit better. Shoulders and knees significantly less painful and I just feel better overall.'

Acute side effects appeared to relate to the growth hormone pulse. Some users reported 'flush and tightness' feelings on using CJC-1295.

'Interestingly, I've started noticing my own natural "pulses" of growth hormone are becoming more pronounced (taking the shot, I know what they feel like now). I get one virtually the same time every day, right around 3:00 p.m. (so I'm reasonably confident it's not a hot flush).'

One user reported elevated heart rate, and difficulty sleeping which contrasts with CJC-1295 proponents of improved sleep. This was observed by other forum users to be caused by underlying cortisol issues, with increased growth hormone release exacerbating insomnia.

'Depending on the actual cause of the insomnia, increased GH release can actually make it worse. That was my experience. I felt like I'd had a double espresso and the feeling lasted for HOURS.'

Some users reported on increased appetite toward certain foods when using CJC-1295.

'Clearly the pulse is bigger now. I can control the hunger (barely) but I find I am looking for something to eat often. I steer myself towards fibrous, relatively low

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calorie foods in an attempt to fill myself up. It doesn't really work. The hunger is pretty much constant. This does seem to trigger more hunger in women than men.

I notice I crave cholesterol heavier -- i.e., hormone building -- foods like butter, eggs and red meat lately.'

CJC-1295 protocols advocated by female users

Posting in forum discussions around sourcing were minimal and in accordance with website rules, however several users mentioned delivery of shipments which indicated web

purchasing. Products were stored in fridges. Some comments were made around reconstitution with bacteriostatic water and lack of information around constitution protocols.

1/2cc 28-30g insulin syringes were recommended. Preloading of syringes was not advised

due to loss of stability. Reconstitution by one user was recommended as follows;

'To reconstitute put 1-2cc in the bottles. The CJC 1295 usually

come in 2mg vial;

2000mcg/1cc: 20mcg/iu

2000mcg/2cc: 10mcg/iu

5000mcg/1cc: 50mcg/iu

5000mcg/2cc: 25mcg/iu

Questions centred on CJC-1295 recommended dosage, effects, frequency of injecting, and optimal cycling. Dosage estimations were extrapolated from male guides and other growth hormone peptides (1mcg/kg), and calculated per bodyweight in kilograms was advised. Tentative gauging of dosage was recommended.

'For men and women the dose is the same.... 1.0 microgram/kg, which also turns out to be the saturation level for most peptides. However, it is wise to start out with less and see how your body reacts before going up. Once you reach the saturation does, more is not better.'

Subcutaneous injecting was advocated to occur prior to bedtime, and after eating. CJC-1295 injecting outcomes appeared to relate to time of day when administered, with pre-bedtime advocated for fat loss and anti-aging purposes, and morning/pre training for muscle enhancement. Site rotation was advised.

'Your injection times must occur at times of natural growth hormone pulsation. You should not arbitrarily pick times of the day. Injection times in order of greatest to least therapeutic effect are: bedtime, immediately post work out,

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immediately upon rising. Any other time of the day the effect of the shot might be negligible. GH spikes encourage restful sleep, so you should actually sleep better.'

Discussions centred on the optimal forums of administration and cycling. Some users advocated a '4 on – 3 off schedule'. One user posted;

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'I've been told that the "norm" is 1iu/day 5 days on 2 days off works well.'
CJC-1295 use of minimum six month continued use was advised in order to see good results. Long term cycles at lower dosages were advocated so as to achieve optimal anti-aging results, despite awareness of damage to pituitary function. Long term use, in one instance eleven months, was observed to contribute to bloating and near constant joint pain.

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'CJC-1295 triggers an unnatural smaller, frequent pulse. Running CJC for relatively short periods of time isn't a problem. It's running it long-term for anti-aging that can eventually cause pituitary problems.'

Discussion

Reviews to date have underscored how athletes use growth hormone to assist recovery from sports injuries, and enhance performance (Erotokritou-Mulligan et al., 2011). Use of growth hormone is common within poly substance taking repertoires of anabolic androgenic steroid users (Skarberg et al., 2009), and young male weight lifters, and associated with anabolic steroid and drug dependence (Brennan et al., 2011). Earlier studies have not found differences in ethnicity, age or sport activity between adolescent users and non-users of human growth hormone, despite evidence for significant association between anabolic steroid and human growth hormone use (Rickert et al., 1992). Of interest for this study, is that Baker et al., (2006) found increases in use of growth hormone for cosmetic reasons among health club attendees, with particular sourcing routes grounded in internet retail. This netnographic study garnered rich data in the under researched area of female enhancement drug use, and the emerging trend of growth hormone used by women for anti-aging, lipolytic, and rehabilitation purposes (Kozinets, 2010). It presents a unique observation of textual discourse of female fora activity on public body building sites around the particular use of CJC-1295, and yields insight into use of this synthetic analogue as per the realities of female users themselves.

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4 Use of enhancement drugs amongst women involved in recreational fitness training and
5 willingness to share opinions and information on the internet have been observed in recent
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8 times, and are perhaps indicative of diffusion of drug enhancement supplements into more
9 mainstream female groups interested to discover the world of image and performance
10 enhancement. Similar to Jespersen (2012), a minority of posts were posted by male partners,
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12 on behalf of interested wives and girlfriends. Research points to female body dissatisfaction,
13 supplement use, unhealthy nutritional practices and weight control practices in bodybuilding
14 (Goldfield, 2009). Gender differences are evident with female athletes reporting
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17 preoccupation with physiques and greater concern with body fat, likelihood to restrict caloric
18 intake, and use weight loss supplements (Gruber and Pope, 2000; Muller et al., 2009).
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23 Motivations to use growth hormone for these women centred on cosmetic shortcuts to obtain
24 the ideal '*sporting*' body (Hargreaves, 1994). Female forum users expressed extreme and
25
26 personal interest in the use of CJC-1295 for image enhancement purposes centring on image
27
28 (the attainment of muscle enhancement, fat loss and youthful skin). Similar to other
29 netnographies investigating use of synthetic tanning peptides (Van Hout, 2014), the internet
30 has become a medium for "*sophisticated communal folk pharmacology*" (Monaghan, 2001;
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32 Skarberg et al., 2009; Smith & Stewart, 2012). Within the cyber community, female
33 interactions on bodybuilding forums potentially create personal and social normalisation of
34 image and performance enhancement drug use in attaining hyper fit and youthful identities.
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37 Such dynamic cyber activity fuels the expansion of self (and '*selfing*') beyond physical
38 limitations (Fernback, 2007; Robinson, 2007), and accelerates knowledge distribution (Smith
39 & Stewart, 2012), in this instance around optimal poly pharming and potential interactions
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42 with other growth hormone and fat burning supplements. Of interest was the lack of reference
43 to online peptide calculators as was reported in an online study of the synthetic tanning
44 peptide, Melanotan (Van Hout, 2014).
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50 Discussions around gender specific outcomes relating to CJC-1295 centred on deleterious
51 health implications on female use, despite commitment to attainment of physical ideals.
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53 Awareness of the growth hormone pulse and gender variations in pulse activity (Van Cauter
54 et al., 1997) complicated discussions and views around protocols for use of CJC-1295 and
55 other synthetic analogues. Normal young adults have low growth hormone levels abruptly
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57 interrupted by large secretory pulses (Van Cauter & Plat, 1996), with major pulses occurring
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1 shortly after slow wave sleep onset (Takahashi et al., 1968; Sassin et al., 1969). According to
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5 Pritzlaff-Roy et al., (2002) females have more frequent growth hormone secretory pulses,
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8 greater basal (non-pulsatile) growth hormone secretion with greater secretory pulse
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10 amplitude, and greater mass of growth hormone secreted per pulse when compared with
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12 males. Growth hormone release at rest is also higher in young females (Van den Berg et al.,
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14 1996; Giustina & Veldhuis, 1998; Wideman et al., 1999) and is a result of a twofold greater
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16 mass of growth hormone secreted per burst in young women (Veldhuis et al., 1995; Van Den
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18 Berg et al, 1996). Users and prospective CJC-1295 users were aware of these implications for
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20 the administration and cycling of CJC-1295. The advice not to use CJC-1295 and concentrate
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22 on diet and training (and similar to Jespersen, 2012) was observed and centred on lack of
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24 available knowledge around potential harms, particularly in the case of female use. Concerns
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26 around long term use are grounded in risks for cardiomyopathy, hypertension, valve
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28 dysfunction, arrhythmias, diabetes mellitus and other adverse health consequences in use of
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30 GH (Colao et al., 2004; Matano et al., 2005; Jorgensen et al., 2007; Colao, 2008).

Limitations

31 Given the combination of self-reported experiences, discussion threads and potential for multiple
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33 screen pseudonyms, it is not possible to provide a detailed representative profile of female CJC-1295
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35 users. We recognise that textual data garnered may be confounded by self-report issues, potential for
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37 reliance on what is reported by female users accessing bodybuilding fora, and lack of
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39 verification of the CJC-1295 and other synthetic growth hormone analogues used. We also
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41 recognise that despite recording 59 distinct site pseudonyms after removal of duplicate
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43 threads, we cannot be sure that multiple threads were generated by the same individuals.
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45 However, validity of the study is enhanced by the systematic manner by which we examined
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47 embedded, multi-level and multi sited online CJC-1295 phenomena (Wittel, 2000) and which
48
49 enhances ‘trustworthiness’ (Wallendorf & Belk, 1989) by virtue of verification of extensive
50
51 similarities across female fora activity relating to reasons for use, practices and outcomes.
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53 Secondly, validity in adhering to EPP protocols was grounded in our implementation of
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55 partial phenomenological psychological reduction, horizontal consistency and vertical
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57 consistency in interpretation of the data (Karlsson, 1995).

Conclusion

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Increased trend interest in CJC-1295 and other synthetic growth hormone analogues have occurred in line with recent popularity of controversial anti-aging medicine, proliferation of anti-aging products and enhancement drug supplementation and are increasingly driven by media and internet retail. Regrettably, the consequences of '*cash only*' business in the web retailing, sale and purchase of CJC-1295 include the lack of reporting of adverse events, product monitoring and overall pharmacovigilance. The study has implications for clinical screening and practice, due to the considerable overlap between the use of enhancement drugs and complications associated with dependence. Further research is warranted into the neurobiology of growth hormone abuse so as to investigate long term effects and inform health professionals and users. Credible forms of health education tactics should accurately advise users of health risks, hazards associated with counterfeit products and illicit sourcing of these supplements. Continued development of internet methodologies to improve indigenous harm reduction on sites with enhancement drug activity, and improved site surveillance for novel enhancement drug market entries, exposure of ideas, user perspectives and user trends is warranted.

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Tables

Table 1 Sites containing discussions around CJC-1295 and records remaining following application of exclusion criteria.

	WEBSITE ADDRESS	NAME OF WEBSITE	Initial search result in female sections number of users reports/threads	After exclusion due to: -No Females experiences/queries/discussions in thread -Duplicates	Distinct pseudonym site recorded
1	www.anabolicminds.com	Anabolic Minds	5	5	12
2	http://www.eroids.com/	Eroids.com	0	0	0
4	http://forums.steroidal.com/forum.php	Steroidal.com	0	0	0
5	http://www.uk-muscle.co.uk/forum.php	UK-M	4	1	2
6	http://www.bodybuilding.com/	Bodybuilding.com	1	1	4
7	http://www.worldclassbodybuilding.com/forums/	World Class Bodybuilding	1	0	0
8	http://www.elitefitness.com/forum/	Elite Fitness	10	7	18
9	http://www.anasci.org/vB/	Ana Sci	0	0	0
10	http://www.ugbodybuilding.com/threads/11262-Bad-headaches-from-Cjc-1295-w-o-dac	UG Bodybuilding	1	1	3
11	http://forums.rxmuscle.com/search.php?searchid=1254629	Rx Muscle Forum	3	1	4
12	http://www.anabolic-enhancement.com/forum/index.php	Peak Muscle	1	1	5
13	http://www.steroidology.com/forum/search.php?searchid=3082462	Steroidology	11	6	11
	TOTALS:		37	23	59

Table 2 Categories and themes emerging during the empirical phenomenological psychological analysis method.

Theme	Category
<i>Female interest in CJC-1295 and informed decision-making</i>	<ol style="list-style-type: none"> 1. Choices to use CJC-1295 centring on its properties to stimulate fat loss, enhance muscle tone, improve sleep, joint mobility, aid in healing and improve skin quality and texture. 2. Queries on CJC-1295 on foot of media articles and both online and real peer feedback. 3. Need for informed decision-making based on personal research. 4. Caution advised on using CJC-1295. 5. Those against the use of CJC-1295 advocated adherence to protein diets, use of stimulant fat-burner supplements, and in a minority of postings the use of clenbuterol. 6. Concern for influences and pressures to use CJC-1295 by male trainers, boyfriends and husbands. 7. Which CJC-1295 products to purchase, in terms of whether to purchase CJC-1295 with DAC or without. 8. Views varied on cost effectiveness and weekly dosing schedules. 9. With DAC reportedly more expensive. 10. CJC-1295 safety improved by DAC.
<i>Consequences and risks of female use of CJC-1295</i>	<ol style="list-style-type: none"> 11. Female risks of <i>growth hormone releasing peptides (GHRP)</i> use - damage to the pituitary gland due to the over stimulation and secretion of human growth hormone.. 12. Concern with the consequences of use in females as opposed to males (CJC-1295 effects on muscle enhancement and contraception). 13. Activity awareness of gender specific differences in GH pulses between males and females. 14. Choices to use CJC-1295 and other <i>GHRP</i> centred on GHRP use as alternative to GH use. 15. Concerned husbands and partners.
<i>CJC-1295 poly pharming in female PIED repertoires</i>	<ol style="list-style-type: none"> 16. Well versed and experienced in the use of a host of GH releasing peptides. 17. CJC-1295 considered within a repertoire of existing supplements used (HGH 176-191/HGH FRAG, GHRP2, GHRP6, Insulin Like Growth Factor (IGF-1 LR3; IGF1); Ipamorelin; injectable L-carnitine). 18. GHRP6 described as particularly useful stack along with CJC-1295. 19. GHRP6 advocated by some for its effect on boosting appetite and reduction of inflammation and aiding soft tissue healing.

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	<p>20. Some considered using CJC-1295 with GHRP-2, due to negative views on the GHRP6 associated intense appetite.</p> <p>21. Arginine an essential amino acid viewed to improve fat loss, and improve the use of GHRH in increasing the potency of the GH spike.</p> <p>22. Glutamine used to increase GH in the body</p> <p>23. Stacking with IGF-1 LR3, a synthetic peptide purported to increase muscle growth and fat burning simultaneously, and slower in delivery and release.</p>
<i>CJC-1295 female outcomes</i>	<p>24. Salient CJC-1295 outcomes centred on the improved sense of wellbeing and facilitated continued use.</p> <p>25. One reported use alongside natural progesterone and topical testosterone in order to stave off menopause.</p> <p>26. Those using CJC-1295 when not training and rehabilitating from injury reported satisfactory experiences.</p> <p>27. Acute side effects appeared to relate to the GH pulse.</p> <p>28. Some reported 'flush and tightness' feelings on using CJC-1295.</p> <p>29. One reported elevated heart rate, and difficulty sleeping which contrasts with CJC-1295 proponents of improved sleep.</p> <p>30. Insomnia was observed to be caused by underlying cortisol issues, with increased GH release exacerbating insomnia.</p> <p>31. Some reported on increased appetite toward certain foods when using CJC-1295.</p>
<i>CJC-1295 protocols advocated by female users</i>	<p>32. Posting in forum discussions around sourcing were minimal and in accordance with website rules.</p> <p>33. Several reported delivery of shipments which indicated webpurchasing.</p> <p>34. CJC-1295 products were stored in fridges.</p> <p>35. Some comments were made around reconstitution with bacteriostatic water and lack of information around constitution protocols.</p> <p>36. 1/2cc 28-30g insulin syringes were recommended.</p> <p>37. Preloading of syringes was not advised due to loss of stability.</p> <p>38. Reconstitution advice was given.</p> <p>39. Questions centred on CJC-1295 recommended dosage, effects, frequency of injecting, and optimal cycling.</p> <p>40. Dosage estimations were extrapolated from male guides and other GH peptides (1mcg/kg), and calculated per bodyweight in kilograms.</p> <p>41. Tentative gauging of dosage was recommended.</p> <p>42. Subcutaneous injecting was advocated to occur prior to bedtime, and after eating. CJC-1295 injecting outcomes appeared to relate to time of day when administered, with pre-bedtime advocated for fat loss and anti-aging purposes, and morning/pre training for muscle enhancement.</p>

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	<p>43. Site rotation was advised.</p> <p>44. Some advocated a '4 on – 3 off schedule'</p> <p>45. CJC-1295 use of minimum 6 months continued use was advised in order to see good results.</p> <p>46. Long term cycles at lower dosages were advocated so as to achieve optimal anti-aging results, despite awareness of damage to pituitary function.</p> <p>47. Long term use, in one instance 11 months, was observed to contribute to bloating and near constant joint pain.</p>
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3 DAC Drug Affinity Complex: Drug affinity complex (DAC) technology optimises longer
4 half-life and resultant therapeutic window of products.
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6 Empirical Phenomenological Psychological Method (EPP): a scientific approach for
7 exploring and describing subjective experiences and its perceived meaning. The analysis
8 process emphasizes an open and bias-free attitude towards the data.
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10 Netnography: the study of cultures and online communities emerging through computer-
11 mediated communications.
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